THE HISTORY OF THE *WORKS of the LEARNED.*

For DECEMBER, 1743.

ARTICLE XVII.

ABOUT the Beginning of the Year 1745, there was publiſhed a Book, intituled, *A New Mechanical Practice of Phyſick*, wrote by DAVID STEPHENSON, M. A. which being a Work wholly new, we ſhall give a ſummary View thereof, beginning with ſome preliminary Obſervations extracted out of the Preface and Introduction, and then exhibit a brief Abſtract of each Chapter.

INTRODUCTION.

1. IN order to determine the juſt Boundaries and Pretenſions of Phyſic and Phyſicians, and ſhew how far human Art can be of Uſe in preſerving Health, and curing Diſeaſes, and which are the beſt Methods for that Purpoſe, the Author begins with obſerving, that the Human Body conſiſts of two general Principles, the Solids and Fluids. With

reſpect to the firſt, he remarks, That the Original Elementary Stamina of the Animal Solids, are interwoven, platted, and twiſted together, in ſuch a peculiar Manner in their firſt Formation, whereby they acquire a certain definite Degree of Coheſion, Elaſticity, and Moving Force, which no human Art, nor all the Medicines in Nature, can mend or alter for the better afterwards.

2. The firſt infiniteſſimal Principles of the Animal Solids admit of infinite Variety in their Aſſemblage, Contexture, and Compoſition; from whence proceeds the Difference of Strength, Conſtitutions, Genius, Temperaments, Paſſions, *&c.* in both Sexes, and in the ſeveral Individuals of each Sex.

3. The whole Moving Force whereby the Animal Fluids become at firſt put in Motion, Heat, and Fluidity, and continued therein, belongs intrinſically to the Animal Solids, as their peculiar Property only; the Fluids having no Tendency nor Principle of Motion in themſelves.

4. Every individual Animal, by Virtue of the original Formation and Contexture of its Solids, becomes endowed with a definite Degree of Strength and Moving Force; in the regular or irregular Government whereof, in the ſeveral Stages of Life, conſiſts the Whole that relates to Longævity, Health, and Diſeaſes. Thus, for Example, if this Moving Force of the Solids be ſuffered to riſe too high, and become predominant, or be too long continued, the Animal will have its Growth unduly accelerated, and arrive the ſooner at its full State, Maturity, and Diſſolution, and be more ſubject withal to Diſeaſes of the acute inflammatory Kind; and, on the contrary, if the Moving Force of the Solids is ſuffered to become too languid and depreſs'd, and not duly exerted, or be too long diſcontinued, the Animal will arrive the later at its full Growth and Diſſolution,

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but be more ſubject withal to Diſeaſes of the chronick Kind: So that between theſe two Extreams of too great and too ſmall a Motion in the Solids and Fluids, lies the golden Mean and true Path that leads to the Temple of Health and Longævity.

5. The Human Body is a compound hydraulick Machine, conſiſting of many ſingle Machines, as the Stomach, Heart, Brain, Lungs, Liver, Kidneys, Teſtes, Spleen, *&c.* All which ſimple Glands, Organs, and Muſcles, with their proper Syſtem of Veſſels, being ſo many diſtinct Hydraulick Machines, except the Lungs, which conſiſting of a Syſtem of Sanguineous and Air Veſſels, are properly a Pneumatico-Hydraulick Engine. And as all thoſe ſingle Machines conſtitute but one Compound or Whole, it is neceſſary that they have a mutual Communication or Dependance upon each other; and likewiſe that they be conſtructed of a due Magnitude and Moving Force, to fit them for circulalating and ſecreting their reſpective Fluids. This Quantity of Moving Force that is proper to each Organ or Gland, the Author calls the Natural or Conſtitutional Moving Force, or Quantity of Motion of ſuch Organ. When therefore all the ſeveral Organs have their reſpective Magnitudes and Moving Forces, or Quantities of Motion that are Natural and Conſtitutional thereto, they will be enabled to perform their relative Offices duly, and to maintain a juſt Ballance with each other, which is what conſtitutes the Idea and Definition of perfect Health.

6. The Animal Machine can't be ſenſibly affected with any Diſeaſe, but either the whole Syſtem of the Solids, or of ſome one Organ or more, muſt firſt acquire either too great or too ſmall a Moving Force or Quantity of Motion. And although the Fluids have their Diſeaſes, both as to Quantities and Qualities, diſtinct from thoſe of the Solids, and may happen to be previouſly indiſpoſed; yet, ne-

vertheleſs, the ultimate immediate Cauſe and Eſſence of every Diſeaſe or Diſorder, whatever may be the remote antecedent productive Cauſes thereof, is to be referred to the Solids, which will have their Moving Force either raiſed above, or depreſſed below their Natural Conſtitutional Quantity and Standard Meaſure. And however all the Diſeaſes that can happen to this Complex Animal Machine proceed from this one Cauſe alone, of too great or too ſmall a Moving Force, either in all, or in ſome one or more of its Organs; yet will the ſame appear diverſified with various Phœnomena and Symptoms, as if they proceeded from differeat Cauſes, according as the Change in the Natural Conſtitutional Moving Force is greater or leſs, or as it affects one or more of the Organs.

7. As all Diſeaſes are produced from a Quantity of Motion either added to or ſubſtracted from the Solids of the whole Body, or of ſome one or more of its Organs, whereby their Moving Force is raiſed above or depreſſed below their Natural Healthful Meaſure, and thereby the Equilibrium between the ſeveral Organs becomes deſtroyed; it follows, by neceſſary Conſequence, that the Cure of all Diſeaſes and Diſorders can be effected no other Ways, but by adding or ſubſtracting Motion to or from the Solids of the whole Body, or of ſome one or more of its Organs, until they acquire their Natural Conſtitutional Quantity of Motion or Moving Force, whereby they will become fitted for their reſpective Functions, and maintain a juſt Ballance with each other.

8. However, the Animal Solids can't receive from human Art any greater Degree of Strength and Moving Force, than what they derive from their original Formation and Structure; nevertheleſs, the ſame may occaſionally, from the Influence of Extrinſick Cauſes, have their Moving Force increaſed

creaſed or diminiſhed more than what is conſiſtent with a continual State of Health; and in this Reſpect only it is that they come properly under the Direction of the Phyſician, the whole of his Province being carefully to regard and diſtinguiſh thoſe two oppoſite States of the Solids, and to conſtringe and relax, or increaſe and diminiſh, their Moving Force at proper Times, ſo as to keep them within due Limits and Bounds, and in a Condition for circulating the Fluids with a proper Velocity; to which Purpoſe he muſt likewiſe take Care that the Fluids be of a proper Quantity, that is, ſuch as is proportionate to the Motive Force of the Solids, and have all the other Qualities neceſſary for the ſeveral Offices of the Animal Œconomy. Which two general Intentions relating to the Solids and Fluids, with the beſt Means and Remedies for effecting the ſame, comprehends the whole Practice of Phyſick, and all that human Art can poſſibly do towards obtaining Health, Longævity, or the Cure of Diſeaſes.

9. Having ſhewn Health to conſiſt in a juſt Equilibrium between the Moving Forces of the ſeveral Organs and Glands of the Body, and that all Diſeaſes are only Changes or Alterations in this juſt Ballance of Animal Motion, differing only as to Degrees, Symptoms, Times, Seaſons, Periods, and other Circumſtances; the next Thing to be conſidered is, what are the principal Cauſes and Powers by which this nice Ballance of Animal Motion and Health becomes moſt commonly affected, and by which it is beſt preſerved, or recovered when loſt.

10. The Animal Body conſiſting of a Syſtem of Contractile Diſtractile Tubes, infinite in Number, and in the Manner of their Diſpoſition, Convolution, Curvature, *&c.* filled with Fluids ſubject to great Degrees of Rarefaction and Condenſation, is, by Virtue of this its Compoſition, an Elaſtick,

Vaſcular, Compreſſible Machine, conſtructed upon the moſt perfect Principles of Geometry, Mechanicks, Hydraulicks, Pneumaticks, *&c.* at firſt formed and put in Motion by God, and continued in Motion for a certain Period of Time by the continued Influence of the ſame Creating Power, operating thereon by certain general Cauſes and Remedies; namely, Aliment, Air, Water, Elementary Fire, Motion or Exerciſe, with the Paſſions. All which may be conſidered as ſo many Mechanical Powers, Weights, or Stimuli; which being applied in proper Times and Quantities, are ſufficient to keep the Animal Machine in ſuch a State of Motion as will contribute beſt to its Health and Duration; but when applied in improper Times and Quantities, will as certainly diſturb the Œconomy and Vital Motions, and become the Cauſes of all Diſeaſes.

11. Nature, the great and beſt Phyſician, whoſe Inſtitutions we muſt ever carefully obſerve and follow, if we intend to attain a true Knowledge of any of her Works, hath, we find, ordained Aliment, Air, Water, Fire, Motion or Exerciſe, with the Paſſions, as the only true general Cauſes and Remedies for adding and ſubſtracting Motion to and from the Animal Machine, ſo as to preſerve a juſt Ballance between the Moving Forces of the ſeveral Organs and Glands of the Body. As a neceſſary Conſequence from the foregoing Reaſoning and Obſervations, the Author advances the two following Propoſitions.

12. *Firſt Propoſition.* The moſt perfect, ſafe, univerſal Method for communicating and ſubſtracting Motion in all Degrees to and from the Animal Solids and Fluids, and for regulating the Quantities, Qualities, and Diſtribution of the Fluids, is, by applying a proper Quantity of Preſſure, by Means

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of Air or Water, either to the whole External Body, or to the Reſpiring Organs, *&c.*

13. *Second Propoſition.* All the general Intentoins for preſerving Health, and the Cure of Diſeaſes, may be effected in the moſt perfect Manner, by ſubmitting the Body, for a reaſonable Time, and at due Intervals, to a proper Quantity of Preſſure, *&c.* applied thereto either by Means of Air or Water, joined and aſſiſted with all their other Properties and Qualities of Gravity, Elaſticity, Motion, Attraction, Stimulation, Heat, Cold, Humidity, Dryneſs, Vapours, *&c.* applied to the Body and Lungs in ſuch Degrees, Proportions, and Combinations, as agree beſt with the Conſtitutional State and Structure of the Body, and Organs o Reſpiration, *&c.*

14. For Demonſtration of which two Propoſitions, the Author offers the following Arguments: That Motion is the principal immediate Cauſe and Inſtrument to which alone the Power, Force, and Energy of all Bodies is wholly owing, and by which all the Operations, Effects, and Alterations in the Material Univerſe are produced; for Matter or Bodies, without Motion, can undergo no Change themſelves, nor produce any Change in other Bodies but would remain for ever in a State of abſolute Reſt and Inaction; ſo that whatever Changes happen in Bodies, the ſame are all produced by ſome Quantity of Motion added thereto, or ſubſtracted therefrom.

15. From whence it neceſſarily follows, that no Animal Organiz'd Body can ſuffer any Change, either from Health to Sickneſs, or from Sickneſs to Health, but by ſome Quantity of Motion either added thereto or ſubſtracted therefrom, let the Cauſes communicating or ſubſtracting the Motion be what thy will, material or immaterial; and, conſequently, all Medicines, Means, and Methods,

for preſerving Health, and curing Diſeaſes, be they of what Kind ſoever, and applied in what Manner ſoever, internally or externally, as Emeticks, Catharticks, Diureticks, Sudorificks, Salivaticks, Epiſpaſticks, Bathing, Friction, Cauſticks, Cauteries, Veneſection, Odentalgicks, Sternutories, Opiates, Stimuli, Exerciſe of all Kinds, *&c.* yet ſtill the ultimate Effect of all ſuch Means and Medicines reſolves at laſt and conſiſts wholly in the Quantity of Motion which they either add to, or ſubſtract from the Body, or ſome one or more of its Organs and Parts.

16. The Powers and Virtues of all Medicines and Means of Healing, of what Kind ſoever, whereby they become capable of adding or ſubſtracting Motion to and from the Animal Solids and Fluids, or of producing any Change therein, conſiſts wholly in their Mechanical Properties and Qualities, namely, their Fluidity, Gravity, Elaſticity, Preſſure, Motion, Attraction, Heat, Cold, Humidity, Dryneſs, *&c.* And as Air and Water are eminently endowed with all the ſaid Properties and Qualities, by which alone all other Remedies produce their Effects, it follows, that Air or Water, applied either ſeparately or jointly, will produce all the Alterations wanting in the Solids and Fluids, that any other Medicines can do, but with infinitely greater Succeſs, Certainty, Safety, and Expedition.

17. That the Air, conſidered as operating by its variable Qualities of Preſſure, *&c.* upon the external Human Body, is capable of producing the greateſt and moſt univerſal Alterations in the Animal Solids and Fluids, tending either to Health or Sickneſs, may be found demonſtrated in the ſecond Chapter, *&c.*

18. That the Air, by acting with variable Degrees of Preſſure, *&c.* upon the Organs of Reſpiation becomes the great and moſt univerſal Cauſe

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both of Health and Diſeaſes, is demonſtrated in the third Chapter.

19. That Preſſure, when applied to the Body in a proper Quantity, and for a reaſonable Time, and at due Intervals, either by Means of Air or Water, is capable of effecting the greateſt and moſt univerſal Alterations in the Solids and Fluids, is demonſtrable from the Structure and Mechaniſm of the Body, which being an Elaſtick, Vaſcular, Compreſſible Machine, whenever any additional Preſſure is laid thereon, either by Air or Water, the Effects of that Preſſure will be communicated and propagated inſtantaneouſly throughout the whole Animal Syſtem, in ſuch wiſe, that every the ſmalleſt Evaneſcent Fibre and Capillary Tube will become ſenſibly affected, and feel the Influence thereof; and upon taking off that additional Preſſure from the Body, the whole Vaſcular Syſtem, by its intrinſick reſtitutive Force, will expand and dilate, and both the Solids and Fluids undergoing an univerſal Diaſtole, the whole Body will become increaſed in its Bulk and Dimenſions; and after this Manner the whole Body will continue to oſcillate and vibrate ſucceſſively and ſmartly inwards and outwards, to and from its Axis or Centre, during the Operation.

20. The Truth of the two Propoſitions and Reaſoning aforegoing is further demonſtrable from two invincible Arguments, drawn from Experience and Facts; as appears, firſt, from the Practice of Bathing, the great Efficacy whereof, in curing many Diſeaſes, preferable to all other Remedies, being principally owing to the additional Preſſure, together with the Stimulus of the Water, by which the whole Vaſcular Syſtem becomes ſubject to a general Compreſſion and Squeeze, and is made to vibrate ſmartly; whereby the Viſcidity of the Fluids will be ſubdued, Obſtructions removed, and the Secretions promoted. Secondly, What further proves

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the Truth hereof is, that the Air, with its changeable Properties, is the principal Cauſe of Health and Diſeaſes, as is confirm'd from daily Experience; a Change of Air being the only Cure for many Capital Diſtempers, which admit of no Cure by any other Remedies. In Conſequence of which Reaſoning, the Author propoſes this Problem.

21. *Problem.* To find a Method whereby Air, Water, and Motion, with all their Properties and Qualities of Gravity, Elaſticity, Preſſure, Heat, Cold, Humidity, Dryneſs, *&c.* may be applied, and made to operate in all Degrees and Combinations upon the whole external Body and its Parts, as alſo upon the Organs of Reſpiration, and with ſuch a Force and Momentum as agrees beſt with the preſent Conſtitutional State and Organical Structure of every individual Perſon; and that at all Times, and for as long a Time, as anſwers beſt with the Indications, *&c.*

22. The Solution of this Capital Problem, with its Caſes, the Author propoſes to give in the ſeveral Chapters of this Treatiſe, having firſt premiſed the following general Rules or Aphoriſms.

23. Firſt general Rule is, Never to account for the original Production of Diſeaſes, from a Multiplicity and Chain of remote, hypothetical, complex Cauſes, when one only, or a few, and ſuch as Reaſon and Experience teach us do really exiſt, are ſufficient for producing the ſame: Theſe have been ſhewn to be Aliment, Air, Water, Elementary Fire, Motion or Exerciſe, with the Paſſions; which few general Principles will furniſh us with the true and proper Cauſes of all Diſeaſes, as alſo with the moſt perfect, ſafe, univerſal Means and Remedies for curing all Diſeaſes, *&c.*

24. Second general Rule is, Never to propoſe or undertake the Cure of any Diſeaſe by a Multiplicity of Medicines, the Properties whereof, with their

their ultimate Effects upon the Body, we can never poſſibly know, ſuch as are all or moſt of the artificial Remedies now in Uſe, when all the ſame Intentions of Cure can be more perfectly effected by a few ſimple univerſal Means and Remedies, which are for that End appointed by Providence, and diſpenſed to all Mankind pretty equally and alike, and are endowed with all the Properties and Qualities neceſſary to conſtitute them the moſt ſovereign catholick Means and Remedies; and theſe we find to be Aliment, Air, Water, Fire, Motion or Exerciſe, with the Paſſions; which judiciouſly applied, as here directed, will afford all the neceſſary Means for attaining Health, and the Cure of all Diſeaſes.

25. Third general Rule is, Never to undertake the Cure of any Diſeaſe by Means of Medicines given internally, when the ſame can be effected by proper Mechanical Methods and Means, applied to the Body or its Parts externally. Now whatſoever Intentions and Alterations are wanting in the Animal Solids and Fluids, the ſame may be effected (as is ſhewn in this Treatiſe) more ſafely, expeditiouſly, and perfectly, by proper Methods of applying the Mechanical Properties and Qualities of Air, Water, and Motion, externally to the Human Body, and its Parts; as alſo to the Organs of Reſpiration, with the joint Aſſiſtance of Aliment, and the Paſſions, than by any Medicines adminiſter'd internally, *&c.*

CHAP. I.

1. THE Author in this Chapter demonſtrates the preſent Practice of Bathing to be not only very imperfect, and its ſalutary Effects in a great Meaſure loſt, but to prove often very prejudicial to Health; to which Purpoſe he obſerves, that the whole Efficacy of Bathing, either in cold or hot Water,

Water, conſiſts in the additional Preſſure and Stimulation laid upon the Body, with the great Motion communicated thereto for that Time; the Water, by its Weight and Preſſure, acting alike in both Baths, but by its Qualities of Heat and Cold, producing different and contrary Effects; the former ſerving to conſtringe and brace the Animal Solids, and thereby increaſe their Moving Force, whilſt at the ſame Time it condenſes the Fluids; whereas the latter relaxes the Solids, and diminiſhes their Moving Force, and at the ſame Time rarefies the Fluids.

2. But the principal Property wherein the Efficacy of Bathing conſiſts, is the additional Preſſure of the Water, applied like an univerſal Bandage to the Body, which being an Elaſtick Vaſcular Machine, becomes ſtrongly compreſs'd and ſtimulated thereby, and the whole Animal Syſtem made to oſcillate and vibrate ſmartly from the Surface inwards to its Axis, and from the Axis outwards to the Surface; whereby the Fluids, if viſcid, will become attenuated, and circulated with greater Celerity, and the whole Series of Glands and Veſſels ſqueezed and ſcowered, Obſtructions removed, and the Secretions increaſed, eſpecially by the cutaneous and renal Glands, *&c.*

3. Let a Perſon place his Body in what Poſition ſoever in Water, the under Parts will ſuſtain a greater Preſſure than the upper: ſuppoſe then, that taking one Part of the Body with another, the Whole to be immerged two Feet under Water, or to be preſſed upon by two perpendicular Feet of Water, which is rather more than what it ever is in the Caſe of common Bathing or Swimming; ſuppoſe again, the Surface of this Perſon's Body equal to fifteen ſuperficial Feet, in that Caſe he will ſuſtain an additional Preſſure upon his Body of about 2280 Pounds Weight, which is both the very greateſt,

greateſt, as alſo the very leaſt Quantity of Preſſure that he can poſſibly receive from the Water; whence it is manifeſt, the Bath operates with Reſpect of its Weight and Preſſure, wherein its Virtues and Efficacy chiefly conſiſts, with a certain limited Force and Quantity only, whence its ſalutary Effects muſt be very much limited alſo; ſo that a Perſon, let his Age, Conſtitution, Caſe, Strength, and other Circumſtances, be what they will, he muſt in Bathing the common Way always ſuſtain the very ſame additional Preſſure without Variation; which renders the Caſe of Bathing as now practiſed, exactly the ſame with a Medicine, as ſuppoſe an Emetick, which will admit of being adminiſter'd only in one certain unalterable Doſe or Quantity; whereas all Phyſicians know, that not only different Perſons, but the very ſame Perſon, in different Times, Seaſons, and Circumſtances, require to have the Doſes and Quantities of Medicines, be what they will, varied from leſs to more, and the contrary, according as will anſwer beſt with the preſent Indications and Symptoms. So that the Bath not being capable of having this its principal Property or Preſſure varied, and being always applied in one unalterable Quantity, let the Perſons State, Age, Strength, Conſtitution, *&c.* be what they will, which, together with want of Judgment to know when, and for what Continuance of Time, the Application of ſuch a certain Quantity of Preſſure may be uſeful, is the chief Reaſon why Bathing proves in many Caſes not only unſucceſsful, but becomes moreover oftentimes the Cauſe of new Diſtempers; the Caſe being exactly parallel with giving the ſame Quantity and Doſe of an Emetick to a grown Perſon, and a Child; the former whereof may receive Benefit therefrom, but the latter great Damage, if not certain Death.

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4. The Author having ſhewn the preſent Practice of Bathing to be not only very imperfect and limited in its Effects, but oftentimes greatly prejudicial, proceeds to give the Conſtruction, Draught, Deſcription, Uſe, and Application of a new Machine and Apparatus for Bathing, either with cold or hot Water; whereby a Perſon, tho' no deeper under Water than in a common Bath, ſhall, nevertheleſs, be made to ſuſtain all Degrees of Preſſure by the Water, from that of one perpendicular Foot, aſcending gradually to that of a hundred or a thouſand Feet, and more if required; by which Means the Weight and Preſſure of the Water upon the Perſon's Body may be increaſed or diminiſhed in all Proportions, as will anſwer beſt to the preſent Indications; whereby the Practice of Bathing will become retrieved from its preſent imperfect narrow State, and from being only a particular Remedy, operating with a definitive limited Force and Efficacy will be render'd by this new Method an univerſal Remedy of a general unlimited Force and Virtue, in all Caſes wherein Bathing of any Sort is proper: in ſuch wiſe, that where Bathing proved uſeful in one Caſe before, it will now be uſeful in a hundred or a thouſand different Caſes; and as the ſame is thus improved, may be juſtly reckoned one of the moſt efficacious univerſal Remedies in Nature; and when judiciouſly applied, will ſerve to produce all the Intentions wanting in the Animal Solids and Fluids for preſerving Health, and the Cure of Diſeaſes, *&c.*

5. He proceeds further to ſhew how the Method of Pump-Bathing, as alſo the Practice of Fumigating the Body, either univerſally or topically, with Vapour-Baths, both humid and dry, may be infinitely improved by this new Bathing-Machine and Apparatus; all which, and many other ſingular Caſes, with the Draughts and Deſcription of the Machinery

Machinery thereunto relating, may be found explained and illuſtrated more fully in the original Treatiſe.

The new Methods and Improvements, deſcribed in this Chapter, relating to Bathing, appear to us ſo reaſonable, and of ſuch univerſal Benefit, that we think they merit the moſt ſerious Attention and Encouragement of the Publick, in order to reduce them into Uſe and Practice.

CHAP. II.

1. THE Author in this Chapter diſcourſes of the Mechanical Properties and Qualities of the Air, conſider'd as operating externally upon the whole Body, with their Influence and Effects thereupon. To which End he obſerves as follows.

2. The Air, or Atmoſphere, being a general Chaos or Receptacle, between which and the Earth there is a conſtant reciprocal Circulation of Vapours and Exhalations, raiſed from all Bodies, Animal, Vegetable, Foſſil, by the Action of the ſolar and ſubterraneous Heat or Fire, may be conſidered as the great Laboratory of Nature, ſerving to ſublime, prepare, circulate, and diſpenſe that univerſal, vivifying, vegetative Spirit, to render the Earth prolifick and fertile; the Atmoſphere thus conſtituted ſerving as an univerſal Menſtruum, by the continual Oſcillations whereof all Bodies are kept in a perpetual Agitation and Ferment, and by which the ſeveral progreſſive States and Periods reſpecting the Generation, Growth, and Diſſolution of all Bodies is accompliſh'd.

3. This Heterogeneous Fluid, the Terreſtrial Atmoſphere, by the different variable Attraction of the Sun and Moon, and as it is more or leſs impregnated with Ethereal Elementary Fire, and the Exhalations raiſed from all Sorts of Bodies, becomes

comes ſubject to perpetual Changes, with reſpect to all its Properties and Qualities of Gravity, Elaſticity, Preſſure, Heat, Cold, Humidity, Dryneſs, Motion, *&c.* and acts upon Animal Bodies with very different Degrees and Forces; upon which Accounts it becomes ſo abſolutely neceſſary to the Exiſtence and Continuance of all Degrees of Life, that without it no Animal or Vegetable could ever be produced, live, or grow; for which Reaſon all Animals, from the firſt to the laſt Moment of their Exiſtence, require to be very cloſely enveloped and encompaſſed round with Air, which, like to an elaſtick Mould, Matrix, or Bandage, ſerves, by its changeable Gravity and Preſſure, *&c.* to give Motion, Form, Shape, and Limits, to the Accretion and Growth of the Body, and likewiſe to ſuſtain the Solids, which muſt otherwiſe be violated and burſt to Pieces by the diſtending Force of the rarefying Fluids, which become likewiſe kept in Motion, Fluxility, and Heat thereby.

4. The Animal Body being an Elaſtick, Vaſcular, Compreſſible Machine, as conſiſting of a Syſtem of Contractile and Diſtractile Tubes, filled with Fluids ſubject to great Degrees of Rarefaction and Condenſation, muſt become always neceſſarily affected, either for the better or worſe, by every Change that happens in any one of the Properties and Qualities of the Air; by which it is kept in a perpetual changeable State of Motion, like to a Barometer, Thermometer, or Hygrometer, being always either Contracting or Dilating, Heating or Cooling, *&c.* The Air having always ſuch a neceſſary Connection and Influence upon Animal Life, hath ever been allowed, by all Phyſicians and Philoſophers, both ancient and modern, as the univerſal Remedy and Inſtrument of Nature, by which all that relates to Health, with the Production and Cure of Diſeaſes, is in a Manner wholly regulated;

regulated; for Proof whereof, it will be ſufficient to conſider the general Influence it hath upon the Body, upon which it acts four different Ways. Firſt, it operates conſtantly and variably upon the whole external Body, and conſequently upon the whole Syſtem of the Solids and Fluids. Secondly, it acts alſo conſtantly and variably upon the whole Maſs of Blood, as it circulates through the Lungs. Thirdly, as all the Animal Fluids are ever abſorb'd and impregnated with Air, it hath in that Reſpect a general Action with all the Fluids, and by Conſequence upon all the Solids. Fourthly, it hath a general Action within all the Cavities of the Body, and their Contents, as the Thorax, Abdomen, Stomach, Inteſtines, *&c.* By Virtue of which fourfold general Action it acquires an abſolute Dominion and Empire over Animal Life, and becomes the principal Cauſe both of Health and Diſeaſes; of which there needs no Proof, this being a Truth obvious to every common Obſerver, as well as the Phyſician, how that certain Diſeaſes keep Time exactly as to their Appearance, Periods, and Diſappearance, revolving and coming round periodically with the Seaſons of the Year; and thus we find the Spring, Summer, Autumn, and Winter, each productive of ſuch Diſtempers as may be naturally and neceſſarily produced from the predomenant Conſtitutions of the Air at thoſe Seaſons; and the Diſeaſes which reign in the intermediate Seaſons, appear to be the ſame Specifick Diſeaſes, differing only in Degrees from thoſe Capital Diſeaſes which prevail about the four Cardinal Seaſons: So that we may very juſtly ſay with *Hypocrates*, That the ſeveral Seaſons of the Year, or the different Conſtitutions of the Air at thoſe Seaſons, with reſpect of all its Properties and Qualities, are the true general Parent and productive Cauſe of Diſeaſes, Epidemick, Endemick, *&c.*

5. The Air, with its changeable Properties and Qualities, being allowed by all as the principal productive Cauſe of Diſeaſes, it follows, by neceſſary Conſequence, that if the Air could be changed, and made to operate upon the Body with Properties and Qualities contrary to thoſe by which the Diſeaſes were produced, in that Caſe the Air would become the only perfect Remedy, for curing all ſuch Diſtempers as proceed from the diſproportionate Action of any one or of all its Properties and Qualities; it being a received Phyſical Aphoriſm, That to cure any Diſeaſe perfectly, the Cauſe muſt either be wholly taken away, or made to operate in a contrary Manner; or, which comes to the ſame Thing, Diſeaſes muſt ever be cured by Cauſes oppoſite and contrary to thoſe by which they were produced. So that when any Diſeaſe is produced, from the Action of any one of the Properties of the Air being relatively diſproportionate to the Conſtitutional State either of the Body or Reſpiring Organs, it will be as impoſſible and unreaſonable to propoſe, to cure ſuch a Diſeaſe, without changing the Properties of the Air by which it was produced, as it would be to cure a Dropſy by Tapping, Bliſtering, Purging, Scarifying, Sweating, Salivating, *&c.* For tho' the Waters may be forced and drained off by thoſe unnatural Paſſages, and kept under for a Time by theſe Means, yet ſo long as the Renal Glands continue obſtructed, or otherwiſe incapacitated for their Office, which is the true Cauſe of this Diſtemper, it will be in vain to expect a perfect Cure, without removing the Cauſe, and reſtoring the Renal Glands to their Natural Conſtitutional Moving Force.

6. Having ſhewn the Air to be the true general Cauſe both of Health and Diſeaſes, according as its Qualities are relatively well or ill proportioned to the Conſtitutions of Perſons; now, in order to

attain

attain all its good Effects, and remedy or prevent all its ill Effects, the Author, for that Purpoſe, proceeds to give the Draught, Deſcription, Uſe, and Application, of a new Machine and Apparatus, whereby an Artificial Atmoſphere may be prepared at all Times and Seaſons, having all its Properties and Qualities regulated and adjuſted in all Degrees and Combinations, independently of the General Atmoſphere, as ſhall agree beſt with the preſent Conſtitutional State of every Perſon: ſo that by having ſuch a Machine and Artificial Atmoſphere thus properly prepared, wherein a Perſon may incloſe and ſhut himſelf up at certain Times, and by cauſing this Atmoſphere to operate upon his Body for a reaſonable Time, with its Qualities intended and remitted in all Degrees as he finds ſuits beſt with his preſent Caſe, he may raiſe or lower the Moving Force of his Solids, to what Pitch or Degree he finds moſt agreeableto his preſent Exigency, in like Manner as putting Hair in Buckle, or Winding up a Watch, *&c.*

7. Such an Artificial Atmoſphere, or Air-Bath, which admits of having all its Qualities changed in all Degrees and Combinations, as anſwers beſt to the preſent Indications, being made to operate externally upon the whole Body, as alſo upon the Organs of Reſpiration, will prove the moſt ſovereign perfect Remedy, both for Prevention and Cure of Diſeaſes proceeding from the relatively diſproportionate Qualities of the General Atmoſphere; by reaſon this Artificial Atmoſphere can at all Times, and for any Space of Time, and in all Places, have its Properties and Qualities intended and remitted, regulated and adjuſted, ſo as to act with all Degrees of Force, independently of and contrary to thoſe of the General Atmoſphere; upon all which Accounts it muſt prove the moſt natural perfect Method for curing all the Diſeaſes produced

thereby: in which Reſpects, this Artificial Atmoſphere may be conſidered as a Fluid Mould or Matrix, that may be ſet wider or cloſer. tighter or ſlacker, to the Body, or render'd heavier or lighter, hotter or colder, moiſter or drier, *&c.* in all Degrees, as ſuits beſt with the preſent State of every Perſon, either to contract or relax the Solids, or to grind and attenuate the Fluids coarſer or finer, *&c.* So that the Air being thus converted into an Artifical Fluid Mould or Bandage, will ſerve, as the moſt efficacious univerſal Remedy in Nature, for attaining the two following Cardinal Intentions, which comprehend the whole Practice of Phyſick, and all that is poſſible for Art to do, either for preſerving Health or curing Diſeaſes; and that is, firſt, to conſtringe and relax, or raiſe and lower the Moving Force of the Solids occaſionally, at proper Times, as is found neceſſary, ſo as to keep them in a due State and Plight for circulating the Fluids with a proper Velocity; and, ſecondly, in keeping the Fluids of a proper Quantity, that is, ſuch as is proportionate to the Moving Force of the Solids, and alſo of a proper Degree of Fluidity, Tenuity, *&c.* In the due Effecting of which two general Intentions conſiſts the whole Secret and Art of attaining Health, Longivity, and the Cure of Diſeaſes.

8. Moreover, ſuch an Artificial Atmoſphere, or Air-Bath, will anſwer all the Intentions either of a Cold or Hot Water-Bath, but with infinitely greater Advantage; for, firſt, the Preſſure upon the Body may be increaſed or diminiſhed in all Degrees, ſo as to be an hundred Times, or more, greater than what it ever can be in any Water-Bath that is now in Uſe: and, beſides, there is this very great Advantage attending this new Artificial Air-Bath above a Water-Bath, either Cold or Hot, *viz.* that let a Perſon place his Body in what Situation ſoever, and at what Depth under Water ſoever, yet as the Water

is an Unelaſtick Incompreſſible Fluid, the Preſſure will not be applied to all Parts of the Body equally, the Parts having a greater or leſs Preſſure laid upon them in proportion to their Depth under Water, the Lowermoſt being more compreſſed than the Uppermoſt; which Inequality of Preſſure will always cauſe an irregular unequal Derivation and Revulſion of the Fluids: but in uſing this Artificial Air-Bath the Caſe will be quite different, for as the Preſſure is communicated to the Body by the Air, that being an Elaſtick Compreſſible Fluid, the Preſſure will be laid equally upon all Parts of the Body; ſo that the Derivation and Revulſion of the Fluids, either from the Surface inwards to the Axis of the Body, or from the Axis outwards to the Circumference, will be equable, regular, and uniform. Beſides, the Exerciſe of the Cold Bath is too fatiguing and diſagreeable to moſt Perſons, to purſue the ſame regularly; and by Reaſon of its too ſtrong and ſudden Stimulus, is improper for the old, infirm, and ſuch as have unſound Viſcera, Internal Tumours, Inflammations, Ulcers, Hemorhages, *&c.* All which Inconveniencies will be avoided, and all the ſame Intentions infinitely better attained, by ſuch an Artificial Atmoſphere Air-Bath, the Air being the natural Element of the Human Body. Neither will a Perſon, in going into this Air-Bath, be obliged to change or take off any of his Cloaths; but may go into the ſame as often, and for as long a Time, as he finds Benefit thereby, with as little Trouble as going into his Cloſet or Study, *&c.*

9. A Perſon provided with ſuch a Machine, or Artificial Atmoſphere, thus capable of having all or any of its Properties and Qualities changed and altered at Pleaſure, as ſuits beſt with his preſent Caſe and Indications, will find a ſure Sanctuary and Aſſylum therein; by going at proper Times into

which, he may ſecure himſelf, and bid Defiance to all the malignant Influences and Alterations that happen in the General Atmoſphere; for let the State thereof be what it will, Heavy or Light, Denſe or Rare, Hot or Cold, Wet or Dry, in Motion or at Reſt, impregnated with Vapours or Exhalations, of any Kind, or not, *&c.* if he either actually finds or apprehends any ill Effects therefrom, he can fit, prepare, and arm this his Artificial Atmoſphere with Properties and Qualities, contrary and differing in any Degrees from thoſe of the General Atmoſphere, and ſuch as he finds agrees beſt with the preſent Conſtitution both of his Body and Reſpiring Organs. And as the Air is, on all Hands, allowed to be the true general Parent and Vehicle for producing and communicating all peſtilential, contagious, epidemical, and endemical Diſeaſes, ſuch a Machine and Artificial Atmoſphere, like to an invulnerable Coat of Mail or Armour, will ſerve as the moſt effectual Means both for preventing and remedying the ſame, *&c.*

10. The Author proceeds further to ſhew, how all the Intentions propoſed from Fumigations and Vapour-Baths, both Humid and Dry, may be obtained by this Machine, with much greater Benefit than by the Methods now uſed for that Purpoſe; for a more full Account whereof we refer to the original Treatiſe.

Upon the Whole we obſerve, that the Arguments aſſigned in Support of this new Practice appear to us ſo demonſtrative and ſtrong, and the Benefit that muſt accrue to Mankind therefrom ſo great, that we think it a common Cauſe, and the true Intereſt of every Perſon; but more eſpecially of the Parliament, who, it is hoped, as being the Guardians of whatever relates to the Lives and Health of the Subject, will promote, and cauſe a thorough

thorough Experimental Enquiry to be made into the Truth of, this *New Practice of Phyſick*, &c.

CHAP. III.

1. THE Author having, in the preceding Chapter, ſhewn what great Influence the Air hath, both in the Production and Cure of Diſeaſes, conſidered as operating externally with all its changeable Qualities upon the Body, comes, in the next Place, to conſider the Mechanical Effects produced in the Blood by the joint Action of the Air and Organs of Reſpiration, and how much the Health and Diſeaſes of the Body depend thereon, as follows.

2. The Human Body is a real Pneumatico-Hydraulick Machine, compoſed of two general Principles, the Solids and Fluids: All the Vital Motions and Functions of which Complex Machine are effected and continued by three general principal Powers; the firſt is the Muſcular Moving Force of the Animal Solids; the ſecond is the Air acting by its Preſſure, *&c.* outwardly upon the whole Body, as alſo inwardly upon the Lungs, and within the Cavities of the Thorax, Abdomen, Stomach, and Inteſtinal Tube, and alſo within the very Subſtance or Interſtices of the Fluids; the third is the Animal Fluids. Now the Solids (by which is meant not only the Heart, with its Syſtem of Arteries and Veins, but likewiſe all the Organs and Muſcles ſerving to Reſpiration and voluntary Motion) together with the Preſſure both of the External and Internal Air, are the two Joint Moving Powers and Forces applied for attenuating and giving Motion to the Fluids, which are to be conſidered as the Reſiſtance to be moved and overcome. When therefore theſe three Powers have their reſpective Forces and Reſiſtances well adjuſted

to each other, all the Vital Motions and Operations will be regularly executed; but when they happen to be relatively diſproportionate to one another, the ſame will become diſorder'd and diſeas'd proportionally. And as one of theſe principal Powers, namely, the Air, is ever changing, as to all its Properties and Qualities, the other two Powers, namely, the Animal Solids and Fluids, will become thereupon neceſſarily ſubject at the ſame Time to the like perpetual Changes, tending either to Health or Sickneſs.

3. The true Uſes of Reſpiration will become beſt known, by conſidering attentively what Alterations, Waſte, Defects, *&c.* the Fluids undergo in the Courſe of Circulation, and how the ſame are to be ſupplied and repaired, *&c.* For this Purpoſe the Author obſerves, that the Blood, which is a very Complex Fluid, being thrown out of the Left Ventricle of the Heart, is conveyed through the Arterial Syſtem to all Parts of the Body, where it not only looſes Part of its Motion, by moving in a Syſtem of Diverging Veſſels, but likewiſe many of its Parts, which it leaves behind for Nutrition of the Body, with what is thrown out by the Expurgatory Glands; the Blood, as it returns through the Venal Syſtem, converging towards the Heart, hath its Motion accelerated, but is withal groſs, vapid, and effete, having its Texture and Craſis quite broken and decompounded, by circulating through the ſeveral Series of Veſſels and Glands, and wants to have its Parts attenuated, mixed, and compounded a-new, and likewiſe to be ſupplied with freſh Matter, both for its own Nutrition, and that of the Body. The ſame is for that Purpoſe mixed with the Chyle, as it arrives near the Right Auricle and Ventricle of the Heart; yet ſtill this Supply of Chyle, added to the Blood, would ſignify little, without a perfect Mixture and Aſſimulation of both together;

together; to effect which perfectly, the Auricles and Ventricles of the Heart, being large hollow Muſcles, are no ways ſufficient; there was therefore a Neceſſity for having another appropriate Organ to anſwer this important End and Uſe, namely, the Lungs, which, by Virtue of their peculiar admirable Structure and Mechaniſm, are in all Reſpects moſt perfectly fitted for this moſt neceſſary eſſential Office. This therefore appears to be the final End and principal Deſign of this admirable Organ, which from its Structure, Operation, and Uſe, is a perfect Pneumatico-Hydraulick Engine; ſerving, like to a Mill or Preſs, for to grind, attenuate, intimately mix, and aſſimulate the Principles of the Blood and thoſe of the Chyle together, ſo as to form one ſmooth, uniform, balſamick, nutritive Fluid of a ſimilar hemogeneous Texture, *&c.* The Author aſſigns a ſecond new principal Uſe to the Lungs, which he thinks to be the proper Gland and Organ for diſcharging the Air out of the Blood, as it becomes too much rarefied and accumulated in the Courſe of the Circulation, and not by the cutaneous Glands. He further conſiders the Organs of Reſpiration as a principal auxiliary Power, acting in Conjunction both with the Stomach in the Work of Digeſtion, as alſo with the Heart in performing the Circulation, *&c.*

4. From all which Conſiderations it neceſſarily follows, that when Reſpiration is not duly performed, neither the Offices of Digeſtion, Sanguification, Circulation, Secretion, Nutrition, *&c.* can be duly executed; ſo that from this Cauſe of an imperfect Reſpiration, join'd to the Errors and Defects of Digeſtion, conſequent thereupon, moſt, if not all Diſeaſes, may be derived, as their true original Cauſe, Source, and Seat.

5. As the Air is one principal Power neceſſarily and jointly concerned in performing Reſpiration, and

and as the ſame is ever changing as to all its Qualities, of Gravity, Elaſticity, Preſſure, Heat, Cold, Humidity, Dryneſs, Motion, *&c.* this great eſſential Office of Reſpiration, with that of Digeſtion, Sanguification, Circulation, Secretion, Nutrition, all depending thereon, muſt become wholly ſubject to the Dominion and Influence of the Air, by the Alterations whereof we become liable to be attacked and arreſted by all the Capital Diſeaſes, as Conſumptions, Aſthmas, Pleuriſies, Atrophies, Cahexies, Hecticks, Dropſies, Relaxed Solids, *&c.* In all which Diſtempers we find a Change of Air to be the only natural perfect Cure, and the only Reaſon why it miſſes is for want of knowing what Properties and Qualities the Air ought to have, which ſhould always be contrary to thoſe by which he Diſeaſe was produced; but the main Difficulty is where to find ſuch an Air: *Hic Labor, hoc Opus eſt.*

6. As the Air is ever changing in its Gravity, Heat, Cold, *&c.* and as there is an almoſt infinite Diverſity in the Structure of the Reſpiring Organs in different Perſons, it is impoſſible that the Air of any Place or Country, let its Properties and Qualities be what they will, ſhould exactly agree with all Perſons alike; and tho' they may ſuit tolerably with the Generality of the Inhabitants, yet there are many who muſt ſuffer greatly therefrom, by Reaſon of the Properties of the Air being relatively diſproportionate to the Reſpiring Organs. This ſuggeſted an Occaſion to the Author to think, that if a Method could be found for conſtructing an Artificial Atſmoſphere, the Air of which ſhould be qualified with ſuch Degrees of Gravity, Elaſticity, Preſſure, Heat, Cold, Humidty, Dryneſs, Motion, Vapours, *&c.* as heſt ſuit with the preſent State of the Patient's Reſpiring Organs, all Diſeaſes produced from an imperfect Reſpiration, Chylification, Sanguification, Circulation, Secretion, Nutrition, (which

are

are the true original Sources of all the Capital Diſeaſes) and whilſt the Lungs are yet ſound and uncorrupted, would become ſafely and perfectly cured thereby.

7. The Author, in Conſequence of the aforeſaid Reaſoning, proceeds to give the Draught, Deſcription, and Uſe, of a New Machine and Artificial Atmoſphere, by which a Perſon may be ſupplied at all Times, and for any Space of Time, with Air for Reſpiration, endowed with all poſſible Degrees of Gravity, Elaſticity, Heat, Cold, *&c.* as agree beſt with the preſent Conſtitutional State of a Perſon's Reſpiring Organs; whereby all the good Effects of the Air may be obtained, and all its bad Effects prevented and remedied. And whenever the Caſe requires, the Air which any one is to breathe withal may be impregnated in all Degrees with Vapours, either Humid or Dry, produced either by Ebullition, Accenſion, Attrition, Fermentation, from Subſtances of all Kinds, Solid or Fluid, Animal, Vegeable, Foſſil; by which Means, the Air he is to reſpire with may be intermix'd, in all Degres, with the Exhalations and Effluvia of all ſuch Subſtances as are found to have any ſanative Virtue, in Reſpect of the Organs of Reſpiration, either for Contracting, Relaxing, Strengthning, Heating, Cooling, Humecting, Drying, Reſolving, Fumigating, *&c.* So that by having the Air in the Reſpiring Veſſel or Machine thus properly medicated, arromatized, and balmified with the Vapours and Odours of all Kinds of proper Subſtances, a Perſon may be put in a Condition, in the Middle of Winter, for to breathe more benign, pure, tepid, dry, ſalubrious Air, than he could by going to *Italy*, *Montpelier*, or any Part of the Earth, or into the fineſt Flower-Garden in the Summer-Seaſon.

8. And

8. And when a Perſon applies the Air thus artificially prepared, with Reſpect to all its Qualities, to his Reſpiring Organs, he may at the ſame Time have the Air likewiſe prepared, in Reſpect of all its Qualities, and applied externally to his whole Body, as has been ſhewn in the ſecond Chapter. And thus we are provided with two Artificial Atmoſpheres; by the firſt whereof the Air may be made to operate with its Qualities in all Degrees externally upon the whole Body, whereby all the good Effects produced by its Action upon the Body externally may be obtained, and all its ill Effects prevented or remedied: And by the ſecond the Air may be made to operate with all its Qualities, and in all Degrees, upon the Organs of Reſpiration, whereby all the good Effects depending on its Action upon the Reſpiring Organs, will be attained, and all its ill Effects prevented or remedied, *&c.*

9. By this Means that Pneumatico Hydraulick Engine, the Lungs and Reſpiring Organs may be brought under the Direction and Management of Human Art, in ſuch wiſe, that it may be regulated and fitted like to a Corn-Mill; whereby the Fluids may be ground finer or coarſer, and have their Texture, Craſis, and Temperament altered and repaired at Pleaſure, *&c.*

10. After being taught, by the Obſervations, Experience, and Authorities of all Ages, that the Air is the principal Cauſe whereon Animal Life, Health, and Diſeaſes chiefly depend, is it not amazing, that this univerſal great Remedy, of Nature's Appointment, without which we cannot live one Minute, ſhould be ſo neglected and ſet aſide, and ſo little regarded as it is in the preſent Practice, and that no Attempts have hitherto been made to reduce the ſame into Uſe and Practice; when we thus plainly ſee that the Air, with all its Properties and Qualities, may (by this new Method) like other Medicines, be adminiſter'd

niſter'd in proper Doſes and Quantities, and made to operate in all Degrees, Combinations, *&c.* upon the Body and its Parts; whilſt at the ſame Time we are induſtriouſly ranſacking all Nature, and analyſing every uſeleſs Drug, in Expectation of new Remedies! But all this will prove only a vain deluſory Reſearch; all the whole Legion and Tribe of Artificial Medicines, in Compariſon of the Air, and the mighty Effects producible thereby, when judiciouſly applied, being no more than a *Caput Mortuum*, or Heap of inſignificant Rubbiſh.

Upon the Whole we obſerve, that the Reaſons offered in Support of the new Doctrine and Practices deſcribed in this Chapter, appear ſo concluſive and demonſtrative, and the Benefits ariſing therefrom ſo great and extenſive, that we think it cannot be too ſtrongly recommended to the Notice and Encouregement of the Publick, to promote and cauſe faithful and impartial Trials and Experiments to be made thereof, *&c.*

CHAP. IV.

1. IN this Chapter the Author gives the Draughts, with the Explanation and Uſe, of a new Machine and Apparatus, for applying and cauſing the Air to act, by alternate Strokes and Impulſes, externally, upon the whole Body, or its ſeveral Parts and Members; which he propoſes as one of the moſt efficacious Kinds of Exerciſe for preſerving Health, and the Cure of Diſeaſes; and to open up and prepare the Way for the more readily apprehending its Effects and Benefits, with the Rationale thereof, he obſerves as follows.

2. Among all the Non-Naturals and Means of Health, none contribute more thereto than Air and Motion, or Exerciſe. Now the real End, Deſign, and Effects of all Exerciſe, of what Kind ſoever,

is

is to communicate a proper Quantity of Motion to the Animal Solids and Fluids, to conſtringe, brace, and augment the Moving Force of the former, and to attenuate and keep the latter in a due State of Tenuity, Heat, Motion, and Fluxility, *&c.* Now the Methods for communicating Motion or Exerciſe to Animal Bodies are various, either Natural or Artificial: Under the firſt Head may be reckon'd Aliment, Air, Fire, and the Paſſions, Walking, *&c.* and under the ſecond Claſs may be referred all Medicines and Means for preſerving Health and curing Diſeaſes, as Bathing, Riding, Emeticks, Catharticks, Dieureticks, Sudorificks, Salivaticks, Frictions, Epiſpaſticks, Cupping, Scarifying, Phlebotomy, Cephalicks, Opiates, Stimuli, *&c.* However, it may be affirmed of one and all the aforeſaid Methods of Exerciſe, eſpecially thoſe of the ſecond Claſs, that by whatever Way the Body is exerciſed, or put in Motion, there is a greater Streſs laid upon ſome Parts than others; or, which comes to the ſame Thing, that Motion is not communicated to all Parts equally and alike; the Conſequence whereof will be an unequal and irregular Derivation and Revulſion of the Fluids, to and from particular Parts of the Body; the Fluids being always determined in the greateſt Quantity and Velocity upon the Parts where is the leaſt Reſiſtance: Conſequently, that Kind of Exerciſe whereby Motion is moſt equally communicated and diſtributed to all Parts both of the Solids and Fluids, muſt neceſſarily be the moſt natural and beſt for preſerving Health, and the Cure of Diſeaſes, except in particular Caſes, wherein Derivation and Revulſion are indicated as neceſſary. Of which equable uniform Method of communicating Motion or Exerciſe to a Syſtem of Elaſtick, Contractile, Diſtractile Tubes, ſuch as all Animal and Vegetable Bodies conſiſt of, Nature hath furniſhed us with two admirable

mirable perfect Inſtances of this Kind. The firſt is that of the Compound Action of the Lungs and Air upon the whole Syſtem of the Fluids, as they circulate ſucceſſively through the Veſſels infinitely divaricated throughout the veſicular membranous Subſtance of the Lungs; by the alternate Syſtoles and Diaſtoles whereof, in Inſpiration and Expiration, the Blood becomes as it were beat and broken by the ſucceſſive Strokes of this Organ, as if kneaded in a Trough, or beat with a Peſtle in a Mortar, whereby Motion is communicated to all Parts of the Blood equally, and the whole Syſtem of the Fluids receives thereby the Benefit of a conſtant and moſt perfect Exerciſe, from the Motion that becomes thus impreſſed thereon by the Air and Lungs, as it circulates through the Pulmonary Veſſels, whereby it becomes as it were wire-drawn, diſſolved, and attenuated, and all its Component Principles perfectly united and fitted for the Offices of the Œconomy; without which conſtant Motion and Exerciſe, which the Blood receives from the Organs of Reſpiration, it would immediately looſe its Fluidity, and become wholly unfit for the Offices of Life, *&c.* The ſecond Example of perfect Exerciſe which Nature preſents us with, is likewiſe derived from the ſame univerſal Cauſe and Inſtrument the Air, conſidered as applied to and operating externally upon the whole Body. For as the Atmoſphere is ſubject to perpetual Changes, as to all its Properties and Qualities, it becomes thereby a conſtant Cauſe of communicating Motion or Exerciſe to Animal Bodies, (which are ever immerged in this turbulent reſtleſs Element) ſo that by the continual variable Oſcillations thereof they become ſubject to a perpetual Motion of Syſtole and Dyaſtole, from the Surface inwards to the Axis or Center, and from the Center outwards to the Circumference, and ſo during he whole Period of Life:

Life: And this univerſal oſcillatory Motion of Contracting and Expanding, thus continually impreſſed upon Animal Bodies, by the Atmoſphere, is ſo far from being prejudicial, that it is abſolutely neceſſary to the Production, Preſervation, and Continuance of all Degrees of Life, in Animals, Vegetables, Artificial Fire, *&c.* without which natural equable Motion or Exerciſe, thus continually communicated by the Air and Elementary Fire, our own and all other Bodies would become arreſted, and fall into a State of abſolute Reſt, Inactivity, or Death. Now, in both the Examples of Exerciſe here produced, it is to be obſerved, that our Bodies become exerciſed, or have Motion given thereto by the Air, which being an Elaſtick Fluid, endowed with ſuch changeable Qualities, becomes, on all theſe Accounts, the moſt proper Inſtrument for communicating Motion and Exerciſe to an Elaſtick, Vaſcular, Compreſſible Machine, ſuch as are all Animal and Vegetable Bodies.

3. The Author having laid down the two remarkable Caſes aforeſaid, wherein Providence makes Uſe of Air as the moſt proper Means for communicating Motion or Exerciſe to Animal Bodies, as the moſt perfect Pattern and Model for our Imitation; conformable to this moſt perfect Plan of Nature, he proceeds to give the Draught, Deſcription, and Uſe of a New Machine, by which the Air may be alternately and ſucceſſively taken off, and laid upon the Body, with all Degrees both of Preſſure and Velocity, *&c.* By which ſucceſſive alternate Strokes and Impulſes of the Air upon the Body, the ſame will become thereupon ſubject to a ſucceſſive univerſal Motion of Syſtole and Dyaſtole, from the Surface inwards to the Axis of the Body, and from the Axis outwards to the Surface; and that with all aſſigned Degrees of Preſſure and Velocity,

city, and with any Interval or Space of Time between the Strokes, *&c.*

The intended Brevity of this Paper not admitting to give a fuller Detail of this Chapter, we refer the Reader to the original Treatiſe, where he will find this Subject handled and exemplified at large, illuſtrated with many new and uſeful Obſervations, wherein we think the Author hath made good what he propoſed in the Argument and Title prefixed to this Chapter.

CHAP. V.

1. THE Author in this Chapter conſiders the Mechanical Effects of the Air upon Animal Bodies, when the ſame becomes ſtrongly excited and put into a tremulous oſcillatory Motion; wherein he propoſes ſome general Principles for conſtructing a Sounding or Phonick Machine or Building, for putting the Air into ſuch a Motion; ſhewing what ſurprizing great Effects may be produced thereby in the Animal Solids and Fluids by the Air, when thus modified, and put into ſuch a particular Kind of Motion; which being properly collected and applied, either to the whole Body, or its Members, will prove one of the moſt natural, univerſal, efficacious Kinds of Exerciſe, both for preſerving Health and curing Diſeaſes, *&c.*

2. He further demonſtrates, that by the variable Action of the Air and Elementary Fire, all Animal and other Bodies are ever ſubject, more or leſs, to ſuch an univerſal, vibratory, tremulous Motion, without which no Animal or Vegetable could exiſt; and then proceeds to ſhew how the Air may have ſuch a vibrative oſcillatory Motion impreſſed thereon in all Degrees, and how the ſame may be applied for communicating the like Motion in all Degrees to the Body, and its ſeveral Regions and

Members; whereby the whole Syſtem, both Solids and Fluids, will become intimately and thoroughly agitated in all their moſt minute Parts; which Motion may be raiſed to ſuch a Pitch and Strength, as to become communicated and ſenſibly felt by every Part; by which quick ſtrong Tremors and Pulſations, thus ſwiftly and inſtantaneouſly propagated throughout the whole Subſtance of the Body, both Solids and Fluids will receive the moſt univerſal perfect Exerciſe, both for preſerving Health and curing Diſeaſes. That ſuch muſt be the ſalutary good Effects following from ſuch a Motion, is demonſtrable from the Mechaniſm and Structure of the Human Body, as being an Elaſtick, Vaſcular, Compreſſible Machine, and from the Laws relating to Percuſſion, Preſſure, Impulſe, and the Communication of Motion in the Elaſtick Bodies; as alſo from the Effects of Muſick upon the Animal Machine, which, like to a moſt exquiſite ſtring'd muſical Inſtrument, becomes extreamly ſuſceptive and retenſive of ſuch a vibrative undulatory Motion. The great Efficacy and Influence of this kind of Motion in the Air, is farther demonſtrable from hence, that the Exiſtence Life and Continuance of Artificial or Culinary Fire is wholly owing to it,

The Subject of this Chapter, with the Obſervations and Arguments offer'd in Support thereof, appear to contain a very extenſive Plan and ſolid Foundation for making many uſeful Improvements in the Practice of Phyſick; for a more full Account whereof we refer to the original Treatiſe.

CHAP. VI.

THIS Chapter contains a new Method for conſtructing Vapour-Baths, both Humid and Dry, and of applying them either Univerſally to the whole Body, or only Topically and Partially, for

for Fumigating and Bathing ſome particular Region or Member thereof, wherein alſo is ſhewn how that univerſal Principle, the Preſſure of the Air and other Fluids, may be apply'd, in all Degrees, to all Parts of the Body, with the great and good Effects that may be produced thereby in the Animal Solids and Fluids, when judiciouſly apply'd by proper Machines; for a more full Account whereof we refer to the Original.

CHAP. VII.

THIS Chapter contains ſome general Obſervations on the Structure Mechaniſm and Morbid Affections of the Stomach, with its Appendage, the Inteſtines and Chylopoietick Organs, ſhewing this primary compound Gland and Organ, when diſorder'd or incapacitated for doing its Duty, to be the true original Cauſe and Source where all or moſt of the catholick capital Diſeaſes have their firſt Riſe and Growth, as the Colic, Iliac-Paſſion, Ruptures, Tympanies, Emphyſemas, Conſumptions, Aſthmas, Dropſies, Atrophies, Apoplexies, Epilepſies, Vertigos, Hydrocephalies, Palſies, Inflammations of the Brain and its Membranes, Phrenſies, Manias, with the Hypochondriac and Hyſterick Affections, *&c.* wherein is propoſed a new mechanical Method for curing or giving Relief to the above Caſes. The Subject of this Chapter we think deſerves a thorough experimental Enquiry, *&c.*

CHAP. VIII.

THIS Chapter contains a new mechanical Method and Apparatus for the Cure of Cutaneous Diſeaſes, and external local Maladies, as Wounds, Ulcers, Inflammations, Gangrenes, He-

morrhages, Venereal Diſtempers, *&c.* by means of Air, *&c.* apply'd by proper Machines to the Parts affected, and made to operate thereon with their Properties and Qualities regulated and adjuſted in all Degrees and Combinations, as anſwers beſt with the preſent Indications, *&c.* This Chapter contains ſeveral new Obſervations and Practices, which appear to promiſe much Good in the Practice of Healing; for a more full Account we refer to the Original.

CHAP. IX.

1. THE Author in this Chapter propoſes the Conſtruction, Draught, Deſcription, and Uſe of a new Inſtrument or Pyrometer, for meaſuring the moſt minute Alterations in the Dimenſions of Animal and other Bodies, either by the different Gravity, Elaſticity, Preſſure, Heat, Cold, Humidity, Dryneſs, *&c.* of the Atmoſphere, or from Motion, Reſt, Sickneſs, Evacuation, Retention, Paſſions, Eating, Faſting, or any other Cauſes whatever, with its Uſe for meaſuring Alterations in the Animal Solids and Fluids, as alſo in the Pendulums of Clocks, occaſioned by any of the aforeſaid Cauſes; by which Inſtrument one may diſcover the comparative State and Force of the Solids, with reſpect to the Degrees of their Conſtriction and Relaxation, with the relative State of the Fluids, as to the Degrees of their Rarefaction and Condenſation; and as ſuch will ſerve as a very uſeful Monitor, whereby a Perſon may form a tolerable exact Judgment of the comparative State and moving Force of his Solids and Fluids, and receive timely previous Notice therefrom, when the Animal Machine and Balance of Health begins to lean and verge towards a diſtemper'd State, from whence proper Diognoſticks, Prognoſticks, and Indications

Indications may be deduced to direct to Practice, both for the Prevention and Cure of Diſeaſes.

2. The Author begins with obſerving that Air, elementary Fire, and Cold, exerciſe an univerſal Empire and Dominion over all Terreſtial Bodies, by which their Generation Growth and Corruption are brought about, all Bodies, both Solid and Fluid, being, by the continual variable Action of thoſe three general Cauſes, kept in a perpetual fluxionary State with regard to their Dimenſions, which are always, either expanding and rarefying, as the Degrees of Heat increaſe, or contracting and condenſing, as the Cold increaſes, or as the Degrees of Heat decreaſe, *&c.*

3. He obſerves further, that no Inſtrument or Pyrometer hitherto invented, is capable of meaſuring the fluxionary Increments and Decrements, produced in the Dimenſions of Bodies, by the Influence of the ſaid general Cauſes, by reaſon thoſe Inſtruments or Pyrometers are ſubject themſelves to the very ſame Alterations in their own Dimenſions; of which he gives for inſtance, the caſe of the lengthning and ſhortning of the Pendulum, the juſt Quantity whereof cannot be meaſur'd or diſcover'd by any Inſtrument hitherto invented, and can only be done by the Inſtrument here propoſed, or ſomething founded upon the ſame Principles.

4. He further obſerves, that to ſolve this Problem, there is nothing more required, only that the Inſtrument or Pyrometer have ſome one fix'd permanent immutable Point, from which its Motion is always to commence and to be computed, and ſhews a Method how it may be done, *&c.* This Chapter propoſes ſeveral new and curious Experiments and Eſſays, that may be made with this new Inſtrument upon all Bodies, Solid, Fluid, Animal, Vegetable, and Metalick, *&c.* for a

more ample Detail whereof we refer to the original Treatiſe.

Air, Elementary-Fire, Water, and Motion, being the general Agents of the Univerſe, by which all the Changes in Animal Bodies, *&c.* tending either to Health or Diſeaſes, are produced, and as this Treatiſe contains certain new Methods and Machines, whereby the ſaid general Remedies and Agents of Nature may be apply'd, and made to operate with all their Powers Properties and Qualities, in all Degrees Combinations Times Seaſons, *&c.* upon the human Body and its Parts, as alſo upon the Organs of Reſpiration, whereby all the Intentions and Alterations wanting in the Animal Solids and Fluids, for preſerving Health and curing Diſeaſes, may be effected in a more ſafe perfect manner, than by any artificial internal Remedies: All which being fully demonſtrable from the Inſtitutions of Nature, the Laws of Motion, and the Animal Œconomy, we are of Opinion, this Treatiſe contains the moſt perfectly extenſive Plan, from which, when duly put in Execution, we may reaſonably expect the greateſt Diſcoveries and Improvements in the Practice of Phyſick, which is at preſent involv'd in the utmoſt Obſcurity and Uncertainty; and, as ſuch, nothing can merit the Attention and Encouragement of the Parliament more, who, it is hoped, as being the Guardians of whatever concerns the Health and Lives of the Subject, will promote and cauſe an impartial and experimental Enquiry to be made into the Truth of this new Practice of Phyſick, as it promiſes ſo much Good to Mankind.

ARTICLE

ARTICLE XVIII.

A Diſſertation on the Origin of the Worſhip the Egyptians *paid to Animals. By the* Abbè Banier. *Read in the Academy of Inſcriptions and Belles Lettres.*

EGYPT has always been regarded as the Theatre of the groſſeſt and moſt ridiculous Idolatry. To pay a religious worſhip to Animals, and even the vileſt Inſects, to place them in their Temples, and feed them carefully, to puniſh with Death thoſe who killed them, to embalm them and raiſe them magnificent Tombs, are Exceſſes of Superſtition with which the *Egyptians* have been reproached at all Times, and which afforded the *Greeks* and *Romans* a Subject for the ſevereſt Satire againſt them. I think it needleſs to trouble this *Aſſembly* with a pompous Detail of Authorities to prove ſo known a Truth; for as *Juvenal* ſays to his Friend,

Well is it known on Egypt's *fertile Shores,*
What Idols Superſtition blind adores!
Yet tell me, Friend, did ever Beaſt incline
To pay to Mortal Honours ſo divine?
Or kneeling ſue his Goodneſs to obtain,
The clement Seaſons, or propitious Rain?
No. ——*but the Brute aſtoniſh'd has ſurvey'd,*
The Man adore the Image which he made;
Has on the Altars ſeen a Monkey plac'd,
With all the Pomp of wild Devotion grac'd:
Or view'd whole Nations on the Banks of Nile,
Raiſe Incenſe to the ſacred Crocodile.

To this Authority of *Juvenal* I might add thoſe of *Virgil* and *Martial*, and, above all, *Lucian*, who

in many Parts of his Dialogues has ſcattered the moſt delicate Raillery againſt the Superſtition of the *Egyptians*. Indeed, if this Charge had been only brought againſt them by the Poets and Satyriſts, one might imagine, that they ſought, without a ſtrict Regard to Truth, to render that Nation ridiculous. But we find the graveſt Authors, as well Hiſtorians as Philoſophers, agree in this Point. *Herodotus*, *Diodorus Siculus*, *Strabo*, *Plutarch*, and ſeveral others, leave no room to doubt of this; and if their Teſtimony was leſs clear than it is, the Urns lately received from *Grand Cairo*, and opened in this Aſſembly, containing the Bones of Birds embalmed, and conſecrated by that to the *Egyptian* Superſtition, are inconteſtable Proofs of what we have ſaid; for we may obſerve with Pleaſure, that if the Teſtimony of the above cited Authors has contributed to give Light to theſe Monuments of Antiquity, the Monuments in their Turn ſerve to confirm what theſe Authors had advanced.

On the other Hand we muſt acknowledge, no People amongſt the Antients were more wiſe and enlightned than the *Egyptians*. The *Greeks* and *Romans*, who conſidered as *Barbarians* all other Nations, conſtantly excepted the *Egyptians* from ſo unjuſt a Cenſure, and their moſt celebrated Authors are full of Encomiums on the Politeneſs and Learning of that People. They confeſs, that from this Country they derive their Knowledge, their Arts, and Myſteries of Religion. Here their great Sages *Orpheus*, *Homer*, *Pythagoras*, *Plato*, acquired that profound and extenſive Literature, that is diſcover'd in their Writings.

I ſhall not at preſent undertake to reconcile theſe contrary Ideas. It is not the only Inſtance we have of Mankind falling into oppoſite Extremes: Nor ſhall I attempt to vindicate the *Egyptians* at the Expence of

of the *Greeks* and *Romans*, who may be juſtly reproached with Exceſſes as monſtrous and abſurd. St. *Clement* of *Alexandria* tells them, how ill it becomes them to ridicule other Nations for Superſtition, while they worſhipped Piſmires, and veild their ridiculous Devotion with a Fable as impious as it was fooliſh. I rather chuſe to examine the Authorities alledged, which are not ſo concluſive as they are imagined to be. We may a little diſtruſt the Authors I have mentioned. The *Greeks* and *Romans* had but a ſlender Knowledge of the *Egyptian* Myſteries, which the Prieſts of that Nation concealed from them as profane Perſons, whom Curioſity only led to viſit their Country. Nor are they perhaps more to be credited on the Article in Queſtion, than in relation to the *Jews*, whom they accuſed of worſhipping the Swine, becauſe the Moſaic Law prohibited the Fleſh of that Animal, and whom they alſo charged with adoring the Head of an Aſs, the Figure of which (as they ſaid) was kept in the Sanctuary, of ſolid Gold.

Judæus licet et porcinum numen adorat
Et cilli ſummas advocet auriculas.

Let us try to penetrate the *Egyptian* Temples, and ſee if it be poſſible to diſcover the Myſteries of their Religion. And here, the Figure of *Harpocrates*, with his Finger on his Mouth, ſeems to hint to us, that theſe Myſteries concealed ſomething, which it was not permitted to every one to know. This gave me a Suſpicion, that the Worſhip they paid to Animals, was neither ſo groſs nor ridiculous as it has always been conceived. I even ſhall endeavour to prove that it was a neceſſary Conſequence of the Principles of their Theology.

In the earlieſt Ages Mankind adored but one eternal almighty Being, the true God. *Noah* endeavoured to preſerve in his Family the Worſhip

his

his Fathers had paid, but it was ſoon changed, eſpecially in the Deſcendants of *Cham*. Theſe being extremely corrupted, loſt the true Idea of the Deity, and began to attach themſelves to ſenſible Objects. As what ſeemed moſt perfect and uſeful to Mankind claimed their Homage, it is eaſy to conceive, by theſe Characters, that the Sun was the firſt Object of Idolatry. From adoring this great Luminary, they paſſed to pay the ſame Honours to the Stars, eſpecially the Planets, whoſe Motions and Influences were more ſenſible; in a word, they ſoon came to worſhip the whole *Hoſt of Heaven*, as we find *Moſes* and the Prophets tell them in the ſacred Writings. They next deify'd the Elements, the Rivers and Mountains; and at laſt they conſider'd Nature itſelf, or the whole World, as a Divinity, which the *Aſſyrians* honoured under the Name of *Belus*, the *Arcadians* by that of *Pan*, and the *Egyptians* (to name no more) by that of *Hammon*; and as if the World were too great to be ruled by one Power, they aſſigned a particular Deity to each Part, that he might govern it the more at Leiſure and with leſs Trouble. Thus Nature was worſhipped in Detail. The Earth by the Names of *Rhea* and *Cybele*, the Fire by thoſe of *Vulcan* and *Veſta*, the Water by the Apellations of *Neptune* and *Thetis*, and the reſt in the ſame Manner. When the firſt Step is made in Darkneſs and Ignorance, the farther we advance we go the farther aſtray. Thus we ſee Superſtition and Idolatry were by degrees carry'd to the moſt horrible Exceſs. Every thing was deify'd; and not to mention the Worſhip paid to Men, ſullied with Crimes, the *Egyptians* in the Caſe before us were charged with carrying their Idolatry even ſo far as to adore Animals and Inſects. But if we enquire of what Nature was the Worſhip they paid them, or whether they regarded them as real Divinities,

we

we find the ancient Authors have not been thoroughly clear on this Subject. *Strabo* ſays only, that there were certain Animals, who were worſhipped thro' all *Egypt*, ſuch as the Ox, the Dog, the Hawk, and the Ibis or Stork, and that there were others, who were only deify'd in particular Cities: Thus the Inhabitants of *Sais* and *Thebes* honoured the Sheep; thoſe of *Lycopolis*, the Wolf; thoſe of *Hermopolis*, the Ape. *Herodotus* adds, that while one Species of Animals in ſome Towns received divine Honours, in others they were had in Execration. Thus the *Mendeſians*, who worſhipped the Goat, ſacrificed the Sheep; while the People of *Thebes*, who adored *Jupiter Ammon* under the Figure of a Ram, offered him the Goat as a Victim. Hence aroſe religious Wars between Cities; owing to the Policy of one of their Kings, who, by theſe ſuperſtitious Quarrels, ſought to amuſe them, and divert them from civil Conſpiracies againſt the State. *Diodorus Siculus*, not contented with informing us of the Hiſtory of the *Egyptian* Worſhip, aſſigns ſeveral Reaſons for it, the greater part Fabulous. The moſt plauſible is that drawn (*a*) from the Uſefulneſs of the Animals themſelves. *Herodotus* had before him hinted this, in ſpeaking of the particular Veneration the *Egyptians* had for the *Ibis*, (*b*) becauſe that in the Spring (ſays that Author) there uſually came out of *Arabia* into *Egypt* a great Number of winged Serpents, who would have done conſiderable Damage to the Country, if theſe Birds had not deſtroyed them: *Cicero* confirms this Sentiment of *Herodotus*. "The "*Egyptians* (ſays he) whom we ridicule ſo much, "have only paid their Veneration to Animals in "proportion to the Benefits received from them, "and if they deify'd the Ibis, it is on account of "his deſtroying Serpents. I could extend this "Remark

(*a*) Diodor. l. 1. (*b*) Loc. Cit.

" Remark to the Advantages they received from " the Ichneumon, Crocodile, and Cat, but I would " not be tedious on this Subject (*c*).

I am willing to believe that this Reaſon ſo often mentioned by the Ancients, was one Cauſe of the great Progreſs the Worſhip of Animals made in *Egypt*; but I cannot think it gave Riſe to it. I am ſenſible indeed that Gratitude and Fear have introduced ſeveral Deities into the World, nor am I ignorant of the great Advantages Men receive from ſeveral Animals, of which *Gerard Voſſius*, in his Treatiſe of Idolatry, has given a very minute Account; but could this Reaſon alone ever ſuffice to change Monſters and Inſects into ſo many Deities? Let us not impute to a wiſe and polite People an Abſurdity they were never guilty of. All Veneration is not of the religious Kind, much leſs a true Adoration, nor is every Object placed in the Temples for publick Reſpect to be admitted in the Rank of Divinities; allowing this, I am of Opinion, that the Worſhip paid by the *Egyptian* Prieſts to Animals was purely relative, and terminated in the Gods, of whom theſe Animals were the Symbols or Repreſentations.

To ſhew that I do not advance this without Ground, I ſhall ſupport it by demonſtrative Proofs. It is well known, that amongſt the *Egyptians* the Ox was the Symbol of *Oſiris* and *Iſis*, and that theſe Deities were no other than the Sun and the Moon. Hence the Worſhip paid to the Oxen *Mnèvis* and *Apis*, of which the former was conſecrated to the Sun, (*d*) and the latter to the Moon, as

(*c*) Ipſi qui irridentur Egyptii numen Belluam niſi ob aliquam utilitatem conſecraverunt, velut Ibes maximam vim ſerpentium conficiunt. Poſſum de Ichneumonum utilitate, de Crocodilorum de Felium dicere, ſed nolo eſſe longior. Cicero de Nat. Decr.

(*d*) De Abſtin. Lib. 2.

as we learn from *Porphyry*, *Elian*, and other Authors. (*e*) *Herodotus* ſpeaking of the Devotion the *Mendeſians* paid to *Pan*, ſays, that they repreſented him under the Figure of a Goat, for myſterious Reaſons; tho' they knew that he was like the other Gods. *Diodorus Siculus* has explained this Myſtery, which *Herodotus* concealed; he tells us, that by the Type of this Animal theſe People adored the Fecundity of Nature, repreſented by the God *Pan*. We now ſee that *Iſis* and *Oſiris* and Nature under the Name of *Pan*, not Oxen and Goats, were the real Objects of the Veneration or Worſhip paid to thoſe Animals by the Inhabitants of *Memphis*, *Heliopolis* and *Mendès*.

(*f*) *Plutarch* judiciouſly obſerves, that the natural Vigilance of Dogs gave Occaſion to conſecrate theſe Animals to the moſt cunning and artful of the Gods; or, which is the ſame Thing, they depictured *Mercury* with the Head of this Beaſt, on Account of theſe Qualities. *Ideo Mercurius capite canino pingitur, quia nihil eſt cane ſagacius.* This Inſtance furniſhes us with the true Reaſon of this great Article of the *Egyptian* Theology, with Reſpect to the Conſecration of Animals, and proves that the Worſhip paid to them was not immediate or perſonal, but terminated in the Deities they repreſented. Thus we find the Inhabitants of *Troas*, who had a ſingular Veneration for Rats, becauſe they had, on a remarkable Occaſion, gnaw'd the Bowſtrings of their Enemies, aſcribed all the Honours to the *Sminthian Apollo*, who, as they ſuppoſed, had ſent them: This we are told by St. *Clement* of *Alexandria* (*g*). However, to ſpare many Citations to the ſame Purpoſe, I think *Herodotus* puts the Queſtion beyond Diſpute by a Diſtinction he mentions, that when the *Egyptians*

(*e*) Lib. 1. (*f*) De Iſide.
(*g*) Animadv. adv. Gentes.

Egyptians offered their Vows to theſe ſacred Animals, they addreſs'd their Prayers to the Gods to whom they were conſecrated; and the ſame Author informs us of the Nature of theſe Vows, by telling us they conſiſted of a Sum of Money for the ſupport of theſe Animals. *Diodorus Siculus* ſays the ſame Thing, theſe are his Words; "The *Egyptians* offered their Vows to the Gods for the Cure "of their Sick Children, and when they were "recovered they carry'd them to the Temple, (*i*) "where having cut off their Hair, they put it in a "Scale, with a Sum of Money of the ſame "Weight, which was preſented to the Miniſters, "who had the Care of the holy Animals." This enables us to account for a Piece of Money found in the embalmed Paw of an Ape, which is ſeen in the curious Cabinet of Mr. *Faucault*, and which no doubt was the offering of ſome new recovered Perſon, who not finding the Miniſter of the Temple, placed the Gift in the Paw of the Animal. (*k*) *Lucan* is therefore in the Right, when after ridiculing the *Egyptians*, who ſerved up ſeveral of their Gods at *Cæſar*'s Table, he adds, that the Prieſts being queſtioned by that Prince about the Worſhip paid to Animals, (*l*) aſſign'd myſterious Reaſons for it, and gave him to underſtand, that under theſe Figures they honoured the Deities they repreſented. To conclude, to theſe they addreſſed their Prayers, while the Offerings were deſtined for the Support of the ſacred Animals.

But it may be asked, why they ſhould chuſe Animals to repreſent the Gods, and why on this Occaſion ſome Animals were preferred to others? *Plutarch* gives us this general Anſwer, that it is becauſe of the particular Relation certain Animals have to the Deity; for (ſays he) the Image of Divinity ſhines out in them, as that of the Sun appears in

(*i*) Lib. 2. (*k*) Lib. 1. (*l*) Pharſal. lib. 10.

in the Drops of Rain, that are gilded with his Rays. Thus the Crocodile, having no Tongue, is conſidered as the Symbol of the Deity, who, without ſpeaking a Word, imprints the Laws of Wiſdom and Equity ſilently on the Heart. In effect (adds the ſame Author) if univerſal Nature herſelf is but one Mirror or Glaſs, in which the Sun of Deity appears reflected with all his Attributes, the caſe is yet more true with Reſpect to living Creatures, nor was there ever Statue, tho' ever ſo Maſterly, could expreſs the Supreme Being, ſo well as the ſmalleſt organiſed Body.

I ſhall to this excellent Reaſon of *Plutarch* ſubjoin three others, drawn from the Aſtrology, Hiſtory, and Theology of the *Egyptians*.

I. Mankind in all Ages almoſt have repreſented the Celeſtial Sphere, and chiefly the Signs of the *Zodiac* and ſome of the Conſtellations, by the Figures of different Animals. *Lucian* informs us in particular, that this was done by the *Egyptians*, who, he tells us, having divided the Heaven into twelve Parts, marked each Conſtellation with the Repreſentation of ſome Animal. Behold now the Signs of the *Zodiac*, diſtinguiſhed by theſe Reſemblances, ſubſtituted in the Place of Stars, which, as I have obſerved before, were the earlieſt Objects of Idolatry. The ſame Author, enlarging on the Subject, adds, that the *Egyptians* worſhipped the Ox *Apis* in Memory of the Bull in the *Zodiac*, and that in the Oracle conſecrated to him, they gave their Predictions with a regard to this Sign. The *Africans* (continues he) that is the *Lybians* did the ſame with Reſpect to the Ram, in Memory of *Jupiter Ammon* (*m*) Theſe who are verſed in the Antiquities

(*m*) *The Reader may conſult* P. Kircher *upon the other Animals of the Sphere of the* Egyptians, *which repreſented the Deities of that antient People. See the 2d Tome of his* OEdipus, *pag.* 160 *and following.*

Antiquities of theſe People know, that their antient Method of Writing, or communicating their Ideas, was by Hieroglyphics, as *Lucan* deſcribes it.

Sanchoniathon, in *Euſebius*, (*n*) relates, that this manner of Writing was taught them by the antient *Mercury*, who, according to *Diodorus Siculus*, was cotemporary with *Oſiris* (*o*); and St. *Clement* of *Alexandria* informs us, that it was peculiarly applied to Aſtronomy, of which he brings an Example, in their repreſenting the Sun by the Figure of a Crab, and the Obliquity of the *Zodiac* by the Folds of a Serpent. There remains then no doubt, but that it was the Celeſtial Gods they adored under the Symbols of the Animals that repreſented them. I am not Ignorant that the Vulgar did not always carry their Views ſo far as theſe Divinities, and that their Worſhip often went no farther than the External Symbols themſelves, that it was from theſe they demanded Relief, and to theſe they addreſſed their Vows. But the preſent Queſtion is not about the Religion of the People, but that of the Prieſts and Sages of *Egypt*; for I queſtion if there was ever a Religion in the World free from Reproach, if conſidered by the Practice of the Vulgar, who in all Ages have lean'd to Error and Superſtition.

II. I found my ſecond Reaſon on the ancient Hiſtory of *Egypt*, which relates how the Gods formerly, perſecuted by *Typhon*, were forced to conceal themſelves under the Figures of different Animals. Now nothing was more proper than ſuch a Tradition, to eſtabliſh the Worſhip we have been treating of, and no doubt theſe Animals were treated with high Reſpect, and Veneration, for fear

(*n*) Præp. Evangl. lib. 1. (*o*) Lib. 1. Stran. l. 5.

fear of violating the Divinities they belonged to. The only Objection to this Conjecture is, that the Fable of *Typhon* is *Greek*, and only related by the *Greek* and *Roman* Writers. But omitting that moſt of the Fables of theſe two Nations were borrowed from the *Egyptians*, and, in particular, that the Battle of the Giants is only a disfigured Tradition of the Hiſtory of *Typhon* and *Oſiris*, do we not ſee in *Egypt* Monuments raiſed on this Subject, of much older Date than the Fables of *Greece?* Cities built, and a publick Worſhip eſtabliſhed, in Honour of the Animals whoſe Figures the Gods are ſaid to have aſſumed? For if we learn from *Ovid* that *Jupiter* transform'd himſelf into a Ram,

——*Duxque gregis fit* Jupiter, *unde recurvis*
Nunc quoque formatis Lybis eſt cum cornibus
Ammon. Ovid. Met. lib. V.

We alſo find that under the ſame Figure he was adored in the celebrated Temple he had in *Lybia*. That *Diana* was changed to a Cat is a Tradition of which the City of *Bubaſtus* was an authentic Monument, being called ſo after the Name of the Goddeſs, and where Cats were had in religious Veneration. The Town of *Mendes* affords the ſame Teſtimony with reſpect to the Metamorphoſis of *Bacchus*, (or, as ſome ſay, *Pan*) into a Goat. The Transformation of *Juno* or *Iſis* into a Cow, appears from the Honours paid her at *Memphis*, under that Symbol. The *Syrians* abſtained from Fiſh, on account of *Venus* aſſuming that Diſguiſe. The Reſpect paid by the *Egyptians* to the Bird *Ibis*, was becauſe *Mercury* had taken that Form. Nor ſhall we believe, that the *Egyptian* Prieſts learned from the *Greeks* this Mythology and the Worſhip founded on it, that they modelled the

Syſtem of their Religion by the Ideas of Strangers, and gave their Cities Names according to the Circumſtances of theſe Fables: is it not more probable to ſuppoſe that the *Greeks* and *Romans* derived their Fables from the Religion of the *Egyptians?*

III. The third Reaſon, which is a Conſequence of the preceeding, is drawn from the Doctrine of the Metemſychoſis, or the eternal Tranſmigration of Souls into different Bodies. It is unneceſſary here to enquire into the Origin of this Doctrine, which *Pythagoras* brought into *Italy*, about the Time of the LXIId Olympiad, or thereabouts. But whether he taught it in the litteral Senſe, or (as Mr. *Dacier* † ingeniouſly is of Opinion) in a moral and allegorical Way, it is certain he was not the Inventor of it, but received it from the *Egyptian* Prieſts, with whom (as *Diogenes Laertius* reports) he continued a long Time, to be inſtructed in their Religion and Myſteries.

Herodotus confirms this; "the *Egyptians* (ſays "that Hiſtorian) are the firſt who taught the Im- "mortality of the Soul, and that after Death it "paſſes ſucceſſively thro' the different Bodies of "Beaſts, Fiſhes, and Birds, whence it returns to "aſſume once more the human Form, finiſhing "this Circuit in 300 Years. There are (adds he) "ſome *Greeks* who have propagated this Doctrine "as if it was their own, I know their Names, but "chuſe to conceal them." (*q*) It is then certain that this Doctrine took its Riſe in *Egypt*, and it had two great Advantages attending it, 1. That it ſerved as a Foundation for the great and important Belief of the Immortality of the Soul. 2. That by teaching the Tranſmigration of the Soul into

† Dacier's *Life of* Pythagoras.
(*q*) Herodot. Lib. 2.

into different Bodies, either noble or deſpicable, according to the Merits of the Perſon, they render'd Virtue amiable and Vice odious: Beſides which, this Doctrine contributed not a little to the Reſpect and Worſhip afterwards paid to theſe Animals, who came to be conſidered as the Vehicles of the Souls of thoſe Perſons, who had gained Eſteem for their Virtues, and by their Abilities done the greateſt Services to the State.

Such were the Reaſons that led the *Egyptians* to eſtabliſh the Worſhip of Animals: a Worſhip, properly ſpeaking, only ſubordinate and relative, of which theſe Animals were not the Objects, but which terminated in the Divinities themſelves, who were venerable even under the meaneſt Symbols.

I ſhould here trace the Beginning of a Practice, whoſe real Motives I have been diſcovering, but I believe it difficult to aſſign a preciſe Date to ſo antient a Superſtition. The Travellers who ſend us Urns and Mummies from that Country, give us little Knowledge of the Antiquity of the Tombs or Monuments where they find them repoſited; and all their ſtricteſt Reſearches to find the Date of them is in vain. *Plutarch*, *Diodorus Siculus*, and *Herodotus*, are but modern Authors with reſpect to ſo antient a Cuſtom, and lived at too great a Diſtance from the Times wherein it begun, to give us any Light. Beſides, that the Primitive Ages ſucceeding the Deluge, and in which the Poſterity of *Noah* ſettled in *Egypt*, are abſolutely unknown to the *Greek* and *Roman* Writers

Thoſe of the Moderns who, from the Fragments of Antiquity, have the beſt cleared up the Confuſion of the *Egyptian Dynaſties*, and juſtly rejected, as fabulous, that innumerable Series of Years given to the Reign of the Gods and Demi-Gods, all agree that *Cham* and his Son *Meſraim* had *Egypt* for their Share, which Land the Scripture calls the

Land of *Meſraim*, and where they reign'd ſucceſſively. *Meſraim* after his Father's Death had him deify'd, and was ſo beloved by his People, that he received from them the ſame Honours at his Deceaſe. This Prince is the ſame with *Menes*, who (as I ſhall ſhow in a particular Diſſertation) is no other than *Oſiris* himſelf. Now it is well known that *Oſiris* was the great Deity of *Egypt*, ſymbolized by the Ox, who, on that account was the Animal the moſt highly reſpected by the *Egyptians*. The Worſhip paid to Animals is therefore as old as the Time of *Oſiris*. To be more particular as to this Date, it is certain, that this Doctrine was eſtabliſhed in *Egypt*, at the Time the *Iſraelites* were in Bondage there, which proves it muſt even then have been antient, ſince any Syſtem of Religion requires a long Time to be univerſally received in a large Country. What happen'd between *Pharaoh* and *Moſes* proves what I advance. This Monarch, in order to be delivered from the Plagues he ſuffered by the Hand of God, intreats *Moſes* to intercede for him, and allows him to Sacrifice to the God of *Iſrael* after his Manner. *Moſes* replies, the Thing was impoſſible, nor could the *Hebrews* dare in Preſence of the *Egyptians* to offer Victims, for which that People had a religious Veneration, becauſe their Sacrifices would to them appear abominable, and might incenſe the People to kill them. He therefore begs they might retire to the Wilderneſs, there to Sacrifice according to their Laws. [And *Moſes* ſaid, it is not meet ſo to do, for we ſhall Sacrifice the Abomination of the *Egyptians* to the Lord our God: Lo, ſhall we Sacrifice the Abomination of the *Egyptians* before their Eyes, and will they not Stone us? *Exodus* viii. 26.] It is not amiſs to remark here, that the *Hebrew* Legiſlator ſeems to have given ſo great a Number of Precepts to the *Jews*, chiefly in Oppoſition to the Impious and Idolatrous

latrous Cuſtoms of the *Egyptians*. Without entring into further Particulars, I ſhall only ſay, *Maimonides* (*r*) remarks, that *Moſes* appointing the *Jews* to offer three Sorts of Victims, *viz.* Rams, Oxen, and Goats, was with a View to render contemptible in their Eyes, the Worſhip paid to theſe Animals by the Inhabitants of *Thebes*, *Memphis*, and *Mendez*. Thus *Manetho* (*s*) aſſures us, *Moſes* directed his Laws in Oppoſition to thoſe of the *Egyptian* Prieſts, enjoining his People to eat the Fleſh of thoſe Animals that were by that Nation held in greateſt Veneration. *Tacitus* was aware of this Truth, when he ſays, ſpeaking of the *Jews*, "That they ſacrificed the Ram in Contempt of *Hammon* (*t*), and the Ox in Ridicule of the *Egyptian Apis*.

With all theſe Precautions however *Moſes* was not able to eraſe the ſtrong Propenſity the *Jews* had contracted in *Egypt* to the Worſhip of Animals, and which diſcovered itſelf on many ſubſequent Occaſions. The golden Calf of *Aaron* and thoſe of *Jeroboam* were formed from the Model and in Imitation of the Ox *Apis*. *Philo* the *Jew* ſays it expreſly, and after him St. *Jerom*: † Upon which it is proper to remark, that when *Moſes*, ſpeaking of the Calf of *Aaron*, ſays, that he *faſhioned the Gold with a graving Tool*, he means, that this High Prieſt graved on the Idol the Marks which diſtinguiſhed the Ox *Apis* from other Images of the Kind: *Philo* alſo obſerves, that the Feaſt celebrated by the *Jews* at the Dedication of this Idol, exactly reſembled that which the *Egyptians* kept in Ho-

(*r*) More Nevochim. part 3. ch. 46. (*s*) Lib. 1. contra Appion. (*t*) Tacit. Hiſt. l. 5.

† Videtur mihi idcirco et Populus *Iſrael* in ſolitudine feciſſe ſibi caput vituli quod coleret; et *Jeroboam* Filius *Nabath* vitulos aureos fabricatus eſt, quod in *Egypto* dedicerant. "Απιν καὶ Μνεῦιν, qui ſub Figurâ Boum coluntur, eſſe Deos, hoc in ſua ſuperſtitione ſervarent. Hieronymus in Oſeam.

nour of *Apis*; in which, according to *Suidas*, they eat and drank, and paſs'd the Day in Rejoicings, for having found the God. See *Exod.* xxxii. *v.* 6. Thus we ſee the Worſhip of Animals eſtabliſhed in *Egypt* in the Time of *Moſes*, which is all that we can ſay with Certainty. The Hiſtory of *Egypt*, preceding this Time, is loſt in the dark Gloom of Antiquity, and only affords to the Curious, Matter for fruitleſs Enquiry and uncertain Conjectures.

ARTICLE XIX.

NOthing can be a properer Embelliſhment of an *Hiſtory of the Works of the Learned*, than Memoirs of the Literati. Of this Claſs, the preſent Age has produced none more celebrated, or more worthy of Fame, than that moſt excellent and accompliſhed Perſon, HERMAN BOERHAAVE, Doctor of Philoſophy and Medicine, Profeſſor of the Theory and Practice of Phyſic, and alſo of Botany and Chemiſtry, in the Univerſity of *Leyden*, Preſident of the Chirurgical College in that City, Fellow of the Royal Society in *London*, and of the Royal Academy at *Paris*.

This great Man was born at *Voorhout*, a ſmall Village in *Holland*, on the laſt of *December*, 1668, about One in the Morning. His Father, JAMES BOERHAAVE, was Miniſter of the Place, vers'd in the *Hebrew*, *Greek* and *Latin* Languages, and excell'd in the Knowledge of Hiſtory: his Behaviour in private Life, and towards his Family, was highly commendable. Our HERMAN loſt his Mother at five Years of Age; whereupon his Father married again, and by this ſecond Venter had two Sons and four Daughters: JAMES, the elder of theſe Sons, who

who was deſigned for Phyſic, is an eminent Divine at *Leyden*, and MARK, the younger, at *Breda*.

HERMAN was intended by his Father for Divinity. With this View he himſelf initiated him in the preparatory Parts of Literature; and with ſuch Succeſs, that at Eleven he was expert in the *Greek* and *Latin* Grammars, ready at tranſlating and writing *Latin*, and not ignorant of Philoſophy.

At the Age of Twelve he was ſeiz'd with a malignant Ulcer in his Thigh, that, for five Years together, interrupted his Studies; and of which at length he cured himſelf, after all the Efforts of Phyſicians had proved ineffectual, by fomenting it with Salt and Urine: an Incident that inſpired his firſt Thoughts of ſtudying Phyſic.

In 1682, being then Fourteen, he was ſent to *Leyden* for the Benefit of his Health and Learning. Here his Progreſs was ſo rapid, that he was qualified for the Univerſity in a very ſhort Space; though ſome Family Embarraſſments determin'd him to defer his Removal thither ſome Months longer than had been otherwiſe needful. Upon his Admiſſion, at the Age of Sixteen, he made a quick Proficiency in Logic, the Uſe of the Globes, Natural Philoſophy, Metaphyſics, and Ethics, in the Knowledge of the *Greek* and *Latin* Authors, in Rhetoric, Chronology, and Geography, and likewiſe in the *Hebrew* and *Chaldee* Languages; labouring inceſſantly at the ſame time to underſtand the Sacred Writings in their Originals.

In 1687, he applied to the Mathematics; and eaſily acquired a competent Knowledge of Geometry, Trigonometry, and Algebra.

In 1689, the twenty-firſt of his Age, he gave a Specimen of his Erudition and Eloquence, in an Academic Oration, on this Topic, "That the Doc-" trine of EPICURUS, concerning *the chief Good*,

" was well underſtood by *Cicero*;" for which a Golden Medal was conferred upon him.

In 1690, he took a Degree in Philoſophy. The Subject of his Theſis was " the diſtinct Natures of " the Mind and Body." In this Performance he refuted the Syſtems of *Epicurus*, *Hobs*, and *Spinoſa*.

Notwithſtanding he had thus qualified himſelf for entering into Orders, and that the little Fortune left him was almoſt exhauſted, yet, fearing to ruſh immaturely into the Sacred Function, he choſe rather, by teaching Mathematics, to ſupport the further Proſecution of his Theological Studies. This Undertaking increaſed his Reputation, and may be ſaid to have alſo laid the Foundation of his future Fortune, by occaſioning his Acquaintance with Mr. *John Vanden Berg*, Burgomaſter of *Leyden*. This worthy Magiſtrate recommended him to the Curators, to compare the *Voſſian* Manuſcripts (purchaſed in *England* for the public Library at *Leyden*) with the Catalogue of Sale. This he performed to the Satisfaction of all concerned, and thereby gained the Eſteem of his Patron to ſuch a Degree, that he was ever afterwards ſolicitous for his Advancement. In Compliance with the Perſuaſions of this Gentleman he joined to his Studies of Philoſophy and Divinity that of Medicine. He deſigned this laſt only as a Relaxation from the two former; but the Propenſity of his Genius ſoon made it become his moſt ſerious Buſineſs. To perfect himſelf therein, he diligently peruſed the beſt Anatomical Writers, made frequent Diſſections of living Animals, and attended thoſe of Profeſſor *Nuck*; nay, the very Slaughter-Houſes did not eſcape him, but furniſhed him with many uſeful Obſervations. With equal Induſtry and Attention he read over the *Greek* and *Latin* Medical Authors, beginning with *Hippocrates*, and ſo proceeding in a Chronological Order,

The Reſult of this was, a peculiar Attachment to *Hippocrates*, from whom he perceived all the *Latin* Writers of the Faculty had derived whatever was valuable in them. Of the Moderns he moſt highly eſteemed that ſecond *Hippocrates* our immortal *Sydenham*.

His next Addreſſes were to Chymiſtry, in the Study and Proceſſes of which he ſometimes ſpent whole Days and Nights ſucceſſively.

He made a conſiderable Proficiency in Botany, by the Help of the *Flores Floræ Hermannianæ*; but, beſides theſe, he was indefatigable in examining, not only the Plants in the Phyſic-Garden, but in the Fields, Rivers, and even in Places almoſt inacceſſible.

However, amidſt all theſe different Reſearches, he inceſſantly proſecuted his Theological Studies; having not the leaſt Intention of deſerting the Sacred Function, to which his Father had deſtin'd him. He deſigned, before his Initiation therein, to have deliver'd an Oration on this Queſtion, "Why ſo many Converts to Chriſtianity were made formerly by illiterate Teachers, and ſo few are made by the learned of the preſent Age?"

As he had, for ſome time, purpoſed to take a Degree in Phyſic, before he entred on the Sacred Office, for that End, he went to the Univerſity of *Harderwic* in *Guelderland*, where he was created Doctor, in *July*, 1693: On which Occaſion he defended a Theſis, on *the Uſefulneſs of inſpecting the Excrements of the Sick, in order to know the State of the Patient*.

It was his Deſign, as ſoon as he returned to *Leyden*, to have engaged directly in the Miniſtry; but Providence had otherwiſe decreed. An incidental Expreſſion of his, in a Converſation that happen'd in the Boat as he came, concerning the Doctrine of *Spinoſa*, entirely defeated his Intention. An ill-natur'd Fellow-Paſſenger took

Occaſion

Occaſion thence to ſuſpect, and as ſoon as they arrived at *Leyden*, to propagate a Report, that *Boerhaave* was become a *Spinoſiſt*. This Scandal was entertained by ſo many, and made ſo ſenſible an Impreſſion, that our Candidate, perceiving it, began to fear, leſt a Licence for Preaching ſhould be refuſed him, if he applied for it. Upon this he conſulted with ſome of his principal Friends, whether he ſhould hazard ſuch a Repulſe, or whether, as he had the requiſite Knowledge and other proper Qualifications of a Phyſician, he had not better lay aſide all Thoughts of Divinity, as a Profeſſion, and apply himſelf entirely to Medicine. They unanimouſly approved of the latter Alternative; and, in Conſequence of that Determination, we ſhall henceforth find him directing all his Views, and exerciſing all his Talents, for his own Reputation and the Benefit of Mankind, in that moſt uſeful and honourable Sphere.

At his firſt ſetting out in this Way, he did not preſently riſe to Fame and Practice; on the contrary, he ſaw ſeveral, inferior to him in Merit, ſurpaſſing him in theſe Reſpects. This did not check, but rather excited him more in the Purſuit of Knowledge; being ambitious of no Succeſs but what ſhould be founded on his Deſerts. And ſo eager was he to eſtabliſh this firmeſt Baſis of Proſperity, that he ſhunned any thing that might interrupt ſo virtuous a Labour: And therefore it was, that he declined an Invitation from one of King *William* of *England*'s chief Favourites, for ſettling at the *Hague*, on very alluring Terms, and ſtill greater Expectations; apprehending the Engagements of that Situation would prove too frequent an Avocation from his beloved Studies.

In 1701, he was prevailed on to ſupply the Place of Profeſſor *Drelincourt*, then deceaſed, as Lecturer upon the Inſtitutes of Phyſic. On his undertaking this Employment he delivered an Oration, *May* the

the 18th, N. S. " recommending *Hippocrates*, re-
" preſenting the Office and Sects of Phyſicians,
" the Origin of the Art among the *Babylonians*
" and *Chaldeans*, the State of it among the *Greeks*
" and *Egyptians*, the primary Conjunction of
" Theory with Practice, the Abuſe of the former,
" by giving it the Preeminence over Obſervation and
" Experience, and the Neceſſity of collecting Facts
" undiſguiſed and untainted by any Hypotheſes."

In his Lectures on the Medical Inſtitutes he took all proper Occaſions of introducing Chymiſtry. This Method was to his Pupils ſo pleaſing, that they unanimouſly importun'd him to inſtruct them in that Art. He complied, and went through a Courſe of it in ſo extraordinary a Manner, as induced the Univerſity of *Groningen*, two Years afterwards, in 1703. to offer him their vacant Profeſſorſhip of Medicine. He declined the Invitation, with grateful Acknowledgdments however of the Favour intended him. His Patron, M. VANDENBERG, then a Burgomaſter of *Leyden*, and one of the Curators alſo of that Univerſity, ſet this Invitation and Refuſal in ſo advantageous a Light, that a Decree paſs'd for an Augmentation of his annual Salary where he was, and for the Reverſion of the next Medical Profeſſorſhip that ſhould there become vacant. Hereupon he pronounced a ſecond Oration, concerning " the extreme Uſefulneſs, and even Ne-
" ceſſity, of Mechanical Reaſoning in Phyſic."

On the 18th of *February*, N. S. 1709. he was appointed Profeſſor of Medicine and Botany, upon the Deceaſe of Dr. HOTTON. The Subjects of his inaugural Speech were, " the Simplicity of true Me-
" dical Science, the Corruption of it by Alchemi-
" cal and Metaphyſical Rhapſodiſts, and the only
" effectual Method of improving and eſtabliſhing it,
" by Obſervation, Experiments, and Deductions
" naturally reſulting from thence." He diſcharged

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the Duties of this Station with his accuſtomed Induſtry, and, in a few Years, enriched the Phyſic Garden with a vaſt Encreaſe of Plants.

In 1714, he was promoted to the Rectorſhip of the Univerſity. The ſame Year, *Auguſt* 8. N. S. he was conſtituted Profeſſor of the Practice of Phyſic, in the Room of BIDLOO. In the Exerciſe of this Function he attended the Univerſity Infirmary twice a Week, to the great Advantage both of his Pupils and Patients. It was about this Time, probably, that he was created Preſident of the Chirurgical College.

At the Expiration of his Rectorſhip, in 1725, he delivered an Oration "on the Method of obtaining Certainty in Phyſic." In this Diſcourſe he had cenſured DES CARTES, for founding a Syſtem of Phyſiology on Hypotheſis, which can be ſolidly grounded on Experiment only. This was heinouſly reſented by one ANDALA, an orthodox *Carteſian* Profeſſor of Divinity and Philoſophy at *Franeker*, who, thinking the Stability of the Church depended on that of his Maſter's Principles, pronounced it to be in the utmoſt Danger by this Attack of them. He inveighed bitterly againſt Mr. BOERHAAVE, as propagating *Spinoziſm* and Infidelity. This was ſo falſe and ill-founded an Accuſation, that the Governors of the Univerſity to which *Andala* belonged inſiſted on his retracting the Scandal, notwithſtanding Mr. BOERHAAVE's generous Inſtances to the contrary. This Affair only added a greater Luſtre to his Character.

His Name was now celebrated in Foreign Nations; and this ſame Year the Academy of Sciences at *Paris* teſtified its Eſteem by a Diploma, appointing him a Correſpondent in Natural Philoſophy; and in 1728 he was elected a Member of that Learned Body, in the Room of Count MARSIGLI, deceaſed, his intimate Friend. *April* 30. 1730, he

was

was propoſed by Dr *Mortimer*, one of its Secretaries, to the Royal Society at *London*, and he was choſen a Fellow, *Nemine Contradicente*.

His own Univerſity embrac'd all Opportunities of advancing his Fame and Intereſt: Accordingly, in 1718, he ſucceeded LE MORT, in the Profeſſorſhip of Chymiſtry; and on the 21ſt of *September* he delivered an Oration on this Subject, "That "Chymiſtry was capable of clearing itſelf from its "own Errors."

On the 22d of the ſame Month, juſt three Years afterwards, he pronounced a funeral Eulogium on his late Friend and Colleague Profeſſor BERNARD ALBINUS, Father of SIEGFRIED ALBINUS, the preſent celebrated Profeſſor of Anatomy at *Leyden*. Herein he drew his own as truly as the Deceaſed's Portrait, while he was extolling that good Man's "inceſſant Diligence, in the Purſuit of new Diſcove-"ries; his Wiſdom, in founding his Natural Phi-"loſophy on Mathematics and Mechanics, and fur-"niſhing himſelf from thence, as well as from Chy-"miſtry, with moſt valuable Aſſiſtances in the heal-"ing Art; his Labour, in collecting, digeſting, and "applying to the Improvement of his Profeſſion, "all that was to be found uſeful in the Anatomical, "Chirurgical, Theoretical, or Practical Writers, "antient and modern; his Judgment, in Methodi-"zing the Fruit of his laborious Reſearches; and "the Perſpicuity, Candour and Courteſy which ac-"companied all his publick Exerciſes."

While Mr. BOERHAAVE was thus laborioufly diſcharging ſo many important Functions, depending too much on the Strength of his Conſtitution, he was, about the Middle of *Auguſt*, 1722, ſeized with a violent Fit of the Gout, which confined him to his Bed near ſix Months. In 1727, he underwent another very dangerous Illneſs, owing to the ſame Cauſe as the former. Being threatned with

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a Relapſe in the Year 1729, he found himſelf under a Neceſſity of reſigning the Profeſſorſhips of Botany and Chymiſtry. This Event occaſioned an elegant Declamation, *April* 28, N. S. in which he commemorates many fortunate Incidents of his Life, gratefully acknowledges the Favours of thoſe who contributed thereto, and expatiates on the Pleaſures which attended the Proſecution of his Botanical and Chymical Employments.

His eighth and laſt Oration was delivered, *Feb.* 8. 1731, on his reſigning the Rectorſhip a ſecond Time. In this Diſcourſe he proves, that a ſtrict Obſervation of and Obedience to Nature is the Phyſician's indiſpenſible Duty, his only Merit, what intitles him to the higheſt Honours in his Profeſſion, and is, moreover, the ſureſt Road to Succeſs.

This moſt uſeful and illuſtrious Life is drawing towards a Period. The above-mentioned Illneſs, which ſeiz'd Mr. BOERHAAVE in 1722, and which proceeded from his expoſing himſelf to the Morning Dews before Sun-riſing, was attended with excruciating arthritic Pains, and at length terminated in a paralytic Affection, which almoſt deprived him of Feeling, and entirely of the Uſe of his Legs; ſo that he was obliged to lie whole Months on his Back, without being able to turn himſelf, on account of the Torment he ſuffered by the leaſt Bending. He attributed his Recovery, after finding no Relief from any other Medicines, to the plentiful Uſe of the expreſt Juices of the lacteſcent and pappeſcent Plants, aſſiſted with the ferulaceous Gums. It was on *January* the 11th that he again opened his private College, after this long and terrible Diſorder: The Evening of which Day was celebrated with public Rejoicings and Illuminations. The Fever that attacked him about the End of 1727 not only brought him to the very Brink of the

the Grave, but ſo irrecoverably impaired his Conſtitution, that he was conſtrained, as we have ſaid, to diveſt himſelf of his two Profeſſorſhips, in the Exerciſes of which he chiefly delighted; though he ſtill laboured in private with great Aſſiduity, even till the Middle of the Year 1737, when he was ſeized with that fatal Diſtemper, which put a Cloſe to his invaluable Life, and unwearied Endeavours for the Good of Mankind.

The firſt Symptom was a Difficulty of Breathing, which increaſed gradually. He has deſcribed his Indiſpoſition, in ſome of his Letters, in Terms becoming a Phyſician, a Philoſopher, and a Chriſtian. In one he wrote to his learned Friend, Baron BASSAND, he thus expreſſes himſelf: "An Impoſthumation of the Lungs, which has daily increaſed for theſe laſt three Months, almoſt ſuffocates me upon the leaſt Motion; if it ſhould continue to increaſe without breaking, I muſt ſink under it; if it ſhould break, the Event is ſtill dubious; happen what may, why ſhould I be concern'd, ſince it cannot be but according to the Will of the Supreme Being, what elſe ſhould I deſire? God be praiſed. In the mean time, I am not wanting in the Uſe of the moſt approved Remedies, in order to mitigate the Diſeaſe, by promoting Maturation, no ways anxious about the Succeſs of them: I have lived to upwards of Sixty-eight Years, and always chearful." Finding alſo unuſual Pulſations of the Artery in the Right Side of the Neck, and Intermiſſions of the Pulſe, he concluded there were polypous Concretions between the Heart and Lungs, with a Dilatation of the Veſſels. *September* the 8th, 1738, he wrote his Caſe, as follows, to Dr. *Mortimer*, Secretary of the Royal Society: "It is a Year ſince Age, Application, and immoderate Fatneſs, have produced an utter Inep-

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" titude to any kind of Exercise in such a heavy " corpulent Body, full of inert Humours, and, " upon the least Motion, gasping for Breath, with " a Pulse strangely irregular; but the most urgent " Symptom was, the Interruption or Stoppage of " Respiration on falling asleep, and the Prevention " of any Rest, by a sudden terrible Sensation, as " of Strangling; upon which the Abdomen with " all the Parts below it became dropsical: And " notwithstanding the Removal of these Symptoms, " there remain Pain of the Belly, with great Weak- " ness and Anxiety, a suffocating Asthma, short " are my Slumbers, disturbed with Dreams, the " Mind is incapable of any Business; wearied with " Conflict, I gain no Release, yet patiently wait " the Divine Pleasure, to which I am wholly re- " sign'd." Thus did Reason and Faith happily contribute, to support him under those Pressures which had else been intolerable.

During this Disease, he intimated to one of his Friends, that he had a clearer Perception of the Distinction and Union of the spiritual and corporeal Parts of him, than was attainable by meer Meditation; as if not otherways procurable than by long Sickness.

Toward the End of *August* he seemed somewhat better, but soon relapsed; and declining to the 23d of *September*, yet still maintaining a serene Composure, he then expired, aged Seventy, wanting three Months.

His Death caused an universal undissembled Mourning; not only his Pupils and particular Acquaintance were affected by the irreparable Loss, but it was felt and lamented by the University and City of *Leyden*, to both which he had long been the highest Honour and Emolument, by the Republic of *Holland*, and by that of Learning. Well did he merit the Character given of him, by the judicious

judicious Tranſlator of our Royal Society's Tranſactions into *French.** " This great Man is departed, " to the irretrievable Loſs of Philoſophy and Phy- " ſic. Long was he the Oracle of his Faculty, and " the Phyſician of all *Europe.* Never was Pre- " ceptor more beloved, Profeſſor more celebrated, " nor Phyſician more conſulted. He arrived to an " Eminence in all the Branches of Medicine, had the " Glory of teaching them with equal Applauſe, and " the Happineſs of ſeeing himſelf admired without " being obnoxious to the Effects of Envy, or to " any diſparaging Contradiction; inſomuch that " he was never mentioned by the greateſt of his " Contemporaries, but with Encomiums. His ſole " Authority, without the Support of Arguments, " was admitted as deciſive. He was not leſs ſucceſs- " ful in Practice, than learned in Theory, and is " therefore ſtiled the *Battavian Hippocrates.* The " Qualities of his Mind rendered him ſtill more " amiable than thoſe of his Underſtanding. He " was a ſure Patron to Men of Genius and Learn- " ing, employing his own Reputation, as it were " wholly for their Service." The ingenious Author of the *Engliſh* Account of his Life, adds to the above Panegyric: " He was a Man of a vaſt Com- " prehenſion, profound Judgment, prodigious Me- " mory, ſolid Experience, and unparallel'd Mo- " deſty. His Religion, though ſtrict, was rational; " he ſought Truth conſtantly, eſpouſed it zealouſly, " and on his Labours Mankind may ſafely rely; " he was faithful and civil to his very Enemies; " his Skill not only in Philoſophy and Phyſic was " reverenced by all who excel in thoſe Studies, " but his Attainments in other Learning excited " Admiration. His Knowledge had a right In-

* By way of Note to *Boerhaave*'s laſt Paper on Mercury, 1736, N. 434, p. 242.

" fluence upon the Temper of his Mind, which " was endowed with all the Humility, Benevo- " lence, Fortitude, and Sincerity, of a ſound and " unaffected Philoſopher".

It cannot be diſagreeable to the Reader, that I ſubjoin to theſe Memoirs of Mr. BOERHAAVE, a brief Account of ſuch of his Writings as have not been taken Notice of in the foregoing Narrative.

His *Inſtitutiones Medicæ* firſt appear'd in 1707, about ſix Years after he commenced Lecturer, and two Years before he was advanced to a Profeſſorſhip. They were printed in Octavo, and have paſſed ſeveral Editions. The Author therein, after a brief but accurate Hiſtory of the Origin, Progreſs and Succeſs of the Art, conſiders the Principles thereof, and diſtinguiſhes its ſeveral Branches. He enters into a Diſquiſition of the Animal Œconomy, treats of the Aliment, which he purſues through the whole Proceſs of its Preparation, by the reſpective Organs and Operations of the Machine, till it is converted into the Subſtance of the Body. All this he does ſo fully, with ſuch Judgment and Perſpicuity, rejecting vain Hypotheſes, delivering no Propoſition as certain, that is not grounded on Obſervation, Experiments, or clear Deductions from them, that the Work has merited and met with the Approbation of the moſt eminent Phyſicians. It was the Fruit of a ſuperior Knowledge in Mathematics, Anatomy, Philoſophy, and Chemiſtry, directed and applied by a ſagacious Underſtanding, with unwearied Induſtry. The Fame of it extended not throughout *Europe* only, but into *Aſia* and elſewhere. It was by Order of the *Muſti* tranſlated and printed in the *Arabic* Language at *Conſtantinople*, to ſpread the Doctrine of it throughout the *Ottoman* Empire.

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In 1708 he publiſh'd his *Aphoriſms* for the Knowledge and Cure of Diſeaſes; which Book has likewiſe undergone ſeveral Impreſſions at *Leyden.* It was the Produce of intenſe Labour and exquiſite Judgment. The Author acknowledges himſelf to have been chiefly enlightned into this Subject, by the Writings of the *Greek* Phyſicians, thoſe ſkilful and diligent Followers of Nature; and he has transferred into this Work the moſt valuable Obſervations and Precepts of *Hippocrates*, together with what is of greateſt Uſe in the reſt of the *Greek* and *Latin* Phyſicians, as well as in the beſt of the *Arabian* and modern Writers: Taking Care, however, not to recommend or alledge any thing from the latter, but what he had confirmed by his own Experience. In ſhort, we have in this Treatiſe an incomparable Syſtem, made up of the approved Diſcoveries of the greateſt Ornaments of the Faculty, in which all the principal Diſtempers are repreſented with their mutual Relations, and the Cauſes Concomitants and Cure of each are diſtinctly and accurately ſtated: And all this ſo methodically, that, as in Geometry, beginning with the moſt ſimple, he proceeds gradually to the leſs and more complicated, ſo that the preceding illuſtrate the following Truths, and a diſagreeable Repetition is avoided.

It muſt be owned, that both the *Inſtitutes* and *Aphoriſms* are delivered with ſuch Brevity, the Doctrines thereof are ſo cloſely compacted, that great Sagacity, as well as Application, is requiſite to the comprehending of them, ſo as to reap any conſiderable Advantage thereby. But to remedy this Inconvenience, and to render them generally uſeful, they have been ſeverally commented on, by two learned Diſciples of the Author: The Inſtitutions, by Dr. HALLER; an *Engliſh* Tranſla-

tion of which Work is now printed in ſix Volumes, Octavo, at *London*, by *W. Innys*, in *Pater-noſter-Row:* The Aphoriſms, by Dr. VANSWEITEN, Phyſician, if I miſtake not, at preſent to their Imperial Majeſties. The Performance of the latter of theſe Gentlemen, in the *Latin* Tongue, was publiſhed at *Leyden*, in two Volumes, Quarto; an *Engliſh* Tranſlation of which is printed by Meſſ. *Knapton*, of this City, in eight Volumes, Octavo. Another Volume is expected from M. VANSWEITEN. When this worthy Perſon has compleated his Deſign, the Work will be equivalent to a Library of practical Writers, and may almoſt obviate the Need of any other, except ſuch as have given Hiſtories of particular Caſes, or treated of ſome cutaneous Diſeaſes, and on ſuch topical Diſorders as thoſe of the Eyes, Ears, *&c.*

The firſt Edition of Mr. BOERHAAVE's *Materia Medica* was in 1719. It was compoſed ſolely for his own College, and not deſigned for the Preſs; but an erroneous Impreſſion of it ſtealing into the World, * to prevent the Miſchief which might ariſe from that, as well as to vindicate his own Reputation and Right, he reviſed and enlarged the genuine Copy, and ſent it to the Preſs. It was reprinted in 1727, with further Corrections. This Treatiſe is here mentioned, not in due Order of Time, but on the Score of its Connection with the *Aphoriſms*, to which it entirely relates; and the prudent Author diſſwades every one from uſing it, who is unacquainted with the Nature of the Diſeaſes deſcribed in the latter, and explained in his Commentaries thereon.

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* Publiſhed at *London* 1717, in Duodecimo.

In 1710, the Year after he was made Profeſſor of Botany, he publiſhed, in one Volume, Octavo, an Index of the Plants then in the Phyſic Garden at *Leyden*. Ten Years after he enlarged it to two Volumes in Quarto; prefixing a new and copious Preface, with a Plan, and ſhort Hiſtory of the Phyſic Garden, of all the Profeſſors preceding him, and of the Improvements it received from each. He indeed had enrich'd it vaſtly beyond any of them, having more than doubled the Number of Plants that were in it when it came under his Care, and raiſed it to the moſt flouriſhing State of any Phyſic Garden in the World, it exhibiting a Specimen of almoſt all the rareſt vegetable Productions of the ſeveral Quarters of the Earth. In this Index our Author has claſſed the Subject more judiciouſly than any before him; forming his *Genera* in the moſt accurate Manner; being the firſt and only Botaniſt who took to his Aſſiſtance all the Parts of Plants ſerving to Fructification, and gave ſo clear a verbal Deſcription of them as to render the Figures of them needleſs.

In 1724 he publiſhed the Caſe of Baron WASSENAER; which, as the elegant Writer of *Boerhaave*'s Life in *Engliſh* ſays, is juſtly deemed an incomparable Specimen of the Art of Deſcription, for inveſtigating the real State of the Patient, and the principal Indications, in moſt intricate Diſtempers.

In 1725, with the Aſſiſtance of the preſent Profeſſor *Albinus*, he gave an Edition of all the Anatomical and Chirurgical Works of VESSALIUS, with the Life of that learned Anatomiſt.

In 1728 he ſet forth another accurate Hiſtory of an uncommon Caſe, which at the End of ten Months proved fatal to the Marquis of St. AUBAN.

The ſame Year his Treatiſe on the Venereal Diſeaſe appeared; ſerving as a Preface to the laſt Edition of the earlieſt Authors on that Subject.

In 1731 he put out an accurate Impreſſion of *Aretaeus*. At this Time, in Concurrence with Dr. *Groenvelt*, he was labouring to give a compleat Edition likewiſe of all the *Greek* Phyſicians, except *Hippocrates* and *Galen*, (that were already done by *Charterus*) and had made a conſiderable Progreſs in *Nicander*; but being greatly retarded in the Proſecution of this noble Deſign, by his many and urgent Occupations, his Death prevented the finiſhing of it.

The following Year produced his Elements of Chemiſtry, in two Volumes, Quarto; which, had it been the only Labour of his Life, would have ſufficed to immortalize his Character. With this excellent Work we may properly enough mention thoſe three Memoirs on Quickſilver, which he ſent to the Royal Societies of *London* and *Paris*, publiſhed in the Tranſactions of the former, N° 430, 443, 444. In theſe Diſcourſes he has communicated the Reſult of much reading and laborious Experiments, in reference to Tranſmutation; which he was inclined to think feaſible.

The laſt of his Publications was that Work of *Swammerdam*, in two Volumes, Folio, intitled, *The Bible of Nature*, in *Latin* and *Dutch*, joint Columns; which owes its Preſervation, with the Life of the Author prefix'd, wholly to him.

There were ſeveral valuable Authors, to the new Editions of which he prefix'd Prefaces. There are ſome Poems alſo of his compoſing.

I will cloſe theſe Memoirs with a few Words concerning Mr. *Boerhaave*'s publick Lectures and Improvements in Phyſic.

Beſide

Beſide the public Lecture on Botany, and the three private Lectures abovementioned on Chemiſtry, the Inſtitutes and Practice of Phyſic, all which every Lecture-Day employed him four Hours in ſpeaking, he frequently ſpent one Hour more in giving a public Lecture on ſome particular Subjects.

He began theſe Lectures about 1702, with a Courſe of Experimental Philoſophy applied wholly to the further Explanation of the animal Œconomy. In 1709, during the Summer, he demonſtrated the Plants in the Phyſic Garden, and in Winter explained the Structure of them. In 1710 he treated on the Method of ſtudying Phyſic. In the two following Years he diſcourſed on the Operations of Medicines, as they act on the Solids only, the Fluids only, or on both (whether ſeparately or at once) or laſtly, as they ſpecifically reſpect particular Parts or Humours. In 1713 his Lectures were on Hearing; the Year following on Viſion; and afterwards on the Origin of Man; he conſidered the Objects of Sight and Hearing, Light and Sound, with the Diſeaſes of the Eye and Ear. In 1715 he deſcanted on Reſpiration. From 1718 to 1728 he dwelt on the four Elements, Fire, Air, Water, Earth. In 1729 he was upon the human *Calculus*. The ſix enſuing Years he deſcribed the Diſeaſes of the Nerves. During 1736, 1737, he explained the Motion of the Heart. The laſt public Lectures, in 1738, were on the Nature and Qualities of Blood.

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